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one of our nation's most unique inventions.  
Experience the Delta Difference!

**DELTA COLLEGE CATALOG 2002-2003**



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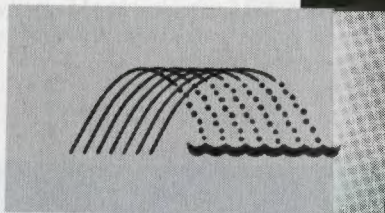
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Delta College personnel made every reasonable effort to determine that everything stated in this catalog was accurate at the time it was printed. Courses and programs offered, tuition and fees, services, and the academic calendar, together with other matters contained herein, are subject to change without notice by Delta College for reasons related to student enrollment, level of financial support, or for any other reason, at the discretion of the College. Delta College further reserves the right to add, amend, or repeal any of their rules, guidelines, policies and procedures. Although the provisions of this catalog are not to be regarded as a legal contract, students enrolled at Delta College are responsible for all regulations in this catalog as well as additions or changes to regulations as they are posted or printed in other College publications.

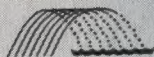


# WELCOME TO DELTA COLLEGE



- ◆ Table of Contents
- ◆ Welcome from Our President
- ◆ Accreditation and Memberships
- ◆ Introducing Delta College
- ◆ Profile of Our Students





# Table of Contents

It was our aim, as we prepared this catalog, to provide you with a tool that will be of help to you throughout the time you spend with us at Delta College pursuing your educational goals. We hope you will find it useful, whether you are a new student, a returning student, or a member of the community involved in our various outreach activities. The Table of Contents below tells you what is covered in each section of this catalog. If you are looking for a specific topic, check the Index on page 198, where you should find that topic listed, along with the page on which you will find the information. If you come across a term you don't understand, check page 196 for Definitions of College Terms. If you can't find information important to you or you find something confusing, stop in at the Welcome Center and talk with the staff. They will be able to clarify for you or direct you to the appropriate staff person for an answer, and they will pass on to us anything you think should be added to or changed in this catalog.

## WELCOME TO DELTA COLLEGE and Happy Reading!

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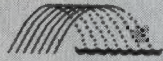
Scholarship Students  
Experience

**the Delta  
Difference**

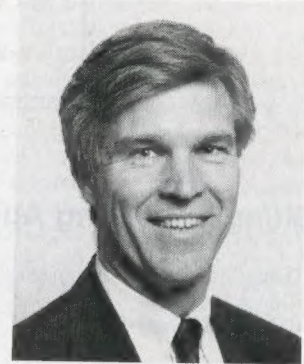
"I was overjoyed upon receiving the scholarship and am honored by your generosity in helping students attain their educational goals. This grant will be used to enhance my academic quest to remain competitive in my employment and community. I will strive to exceed the expected throughout my efforts at school. Again, thanks for giving me this great opportunity."

Marcia Yearwood





## Welcome



Congratulations on selecting one of the premier community colleges in the country to fulfill your educational needs. You just made a wise investment in your future. That's because Delta College, since 1961, has been a trusted leader in education and training. Area residents and students far beyond our service districts - with dreams as diverse as their respective backgrounds - may come to Delta for a variety of reasons but leave with one very important thing in common: an education that makes a difference. Look around you.

Successful Delta graduates are everywhere. People, just like you, who come to Delta with a vision and go on to become leaders of the community, successful business owners, teachers, healthcare workers, skilled tradesmen, to name a few occupations represented by Delta grads.

Quality is one of our trademarks, but there are other distinguishing characteristics that separate us from the competition. Our tuition is the lowest in the region. Our small class sizes allow for personalized instruction from faculty dedicated to teaching, not research or publishing. Our campus renovations are providing the best possible learning environment. In addition, Delta's emphasis on technology continues to make it easier for students to access our classes through the Internet and other distance learning options. As your community college for 40 years, Delta offers something of value for everyone:

- Academic occupational programs with high job placement rates
- Academic courses that easily transfer to four-year colleges and universities
- Leisure and personal interest classes to enrich your life
- Customized programs and services for business and industry through our Corporate Services Division
- Art Exhibits, Speaker Series, Allegro Concert Series and Health & Wellness Facilities

On behalf of our Board of Trustees, students, faculty, staff and administration, I welcome you to Delta College.

Peter D. Boyse, Ph.D.  
President





## Accreditation and Memberships

**Delta College is accredited by  
The Higher Learning Commission and a  
member of the North Central Association of  
Colleges and Schools**

**Approved by the Michigan Department of Education**

### Accrediting/Approving Agencies

American Dental Association Commission on Dental Accreditation

- Dental Assisting
- Dental Hygiene

American Physical Therapy Association Commission on  
Accreditation in Physical Therapist Education

- Physical Therapist Assistant

Commission on Accreditation of Allied Health Education Programs

- Respiratory Therapy
- Surgical Technology

Joint Review Committee on Education in Radiologic Technology

- Radiography

Michigan Board of Nursing

- Practical Nursing
- Registered Nursing

Michigan Department of Consumer & Industry Services

- Nursing Assistant

Michigan Department of Natural Resources/Operator Training

- Water/Wastewater Treatment Technology

Michigan Department of Public Health/Water Division

- Water/Wastewater Treatment Technology

National Automotive Technicians Education Foundation

- Automotive Service Technician

National League for Nursing

- Registered Nursing

Technology Accreditation Commission of the  
Accreditation Board for Engineering and Technology (TAC/ABET)

- Mechanical Engineering Technology

### College Memberships

American Association of Collegiate Registrars  
and Admissions Officers (AACRAO)

American Association of Community Colleges

American Association of Community Colleges International/  
Intercultural Consortium

American Council on Education

American Management Association

Fulbright Association

Michigan Association of Collegiate Registrars and Admissions  
Officers (MACRAO)

Michigan Association of Community Colleges Instructional  
Administrators (CIA)

Michigan Community College Association

Michigan Community College Community Service Association

Michigan Community Colleges for Global Education (MCCGE)

Michigan International Development Education Outreach Network  
(MIDEON)

Michigan League for Nursing

Michigan Liberal Arts Network for Development

Michigan Occupational Deans' Administrative Council

National Association of College and University Business Officers

National Association of Student Aid Administrators

National Council for Occupational Education (NCOE)

National League for Innovation in the Community College

National League for Nursing

National Network of Health Career Programs

Students wishing to review documents pertaining to accreditation should contact the Dean of Faculty.

### Affirmative Action Statement

Delta College is an equal opportunity/affirmative action employer. Delta does not discriminate in employment, education, public accommodation or public service on the basis of religion, race, color, national origin, age, sex, marital status, sexual orientation, height, weight, arrest record, veteran status, disability, or other classifications as required by applicable U.S. federal, state or local law.

Inquiries regarding the Delta College non-discrimination policy may be directed to the Delta College Affirmative Action Officer located in Office J-101, or phone 989-686-9547.





# Introducing Delta College

## Delta College Begins

Delta College has continued, without interruption, the educational opportunities that were previously provided by Bay City Junior College. In the mid-1950's, as the demand for education beyond high school increased in the tri-county area, the percentage of students attending Bay City Junior College from outside the K-12 Bay City Public School District steadily increased. The enrollment was approximately 50 percent non-resident, with about 40 percent of the enrollment coming from Saginaw. Early in 1955, seven community leaders from Bay, Midland and Saginaw met to discuss the possibility of a tri-county college. Their interest and action prompted the following developments:

1955: Organization of the Tri-County Committee of 300 formed to study the needs of higher education in the Saginaw Valley area.

1956: The final report of the Committee of 300, outlining the need to establish and finance a new college, was received.

1957: Legislation was submitted to the State of Michigan Legislature to finance and establish a new institution of higher education.

1957: Voters of Bay, Saginaw, and Midland counties formed a community college district under Act 182 of the Public Acts of 1957 and authorized a levy of 1.5 mills to construct and operate a college.

1958: Bonds were sold to provide the financial structure for Delta College and campus construction began.

1959-61: Members of the faculty and staff of Bay City Junior College assisted in planning for the new college. Many of the Bay City Junior College faculty, students, and staff became part of the new college as Bay City Junior College operations were assimilated into Delta College.

1961: Delta College opened.

## College Locations

The College main campus is located on a 640-acre campus complex in Bay County bordered by Hotchkiss, Mackinaw and Delta Roads (please see maps at the back of this catalog). Noted for its beautifully-landscaped center garden, the College has miles of nature trails, running and fitness trails, tennis courts, and archery and golf areas, as well as a covered bridge. The natural surroundings of Delta College positively enhance the learning process of students. The main campus site, at University Center, Michigan, lies almost midway between the three counties' major cities of Saginaw, Bay City, and Midland. This triangle forms the heart of the Saginaw Valley area which is drained by the Saginaw River and its tributaries, northward to the Saginaw Bay and Lake Huron. Bay County adjoins the Saginaw Bay, an important recreational area and waterway whose ports are part of the St. Lawrence Seaway system.

Delta College has major centers in each of the three counties: Delta College Planetarium and Learning Center in Bay City; Delta College Midland Center; the Ricker Center and the Saginaw Centre in Saginaw. The tri-county area is one of the major concentrations of population within the state. The 1990 population census reports an area population of approximately 399,320. Sixty-three percent of the people are classified as urban residents, with 44 percent residing within city limits.

## Accreditation

Delta College is accredited by The Higher Learning Commission and is a member of the North Central Association of Colleges and Schools (NCA). Initial accreditation was granted the College in October, 1962 by the Michigan Commission on College Accreditation. A status study to prepare for candidacy was submitted to the NCA in May, 1964, as a first step toward regional accreditation. College officials were notified in July, 1966, that the College had been accepted as a candidate for accreditation based on a report of a NCA visitation team. The Self-Study Report was completed in May, 1967, and accreditation was granted in April of 1968. NCA has subsequently reaccredited the College in 1973, 1984, and again in 1993. For inquiries regarding accreditation, contact the North Central Association of Colleges and Schools, Commission on Institutions of Higher Education, 30 North LaSalle Street, Suite 2400, Chicago, Illinois 60602-2504; telephone 800-621-7440; fax 312-263-7462; e-mail address [info@ncacihe.org](mailto:info@ncacihe.org) or access the Web site at [www.ncacihe.org](http://www.ncacihe.org).

Several occupational academic programs also have received additional accreditation status from their corresponding professional boards, councils, or regulatory groups.

## National League for Innovation

Delta College is a charter member of the National League for Innovation in the Community College. The League is comprised of 20 college districts with 58 campuses, enrolling more than 650,000 students. Additionally the League has over 700 colleges who have alliance membership. Delta's membership is significant recognition that it is devoted to the improvement of learning through experimentation and innovation. The League places a strong emphasis on research, evaluation, and dissemination of information on innovations. In this way, potentially valuable new approaches to instruction are made known and an opportunity is provided to judge their suitability for use at other colleges. Participation in League activities enables Delta to adapt and adopt those innovative practices which have proved effective elsewhere, while sharing the results of its own innovations with colleges in other districts. This means that residents of all ages in the tri-counties have the opportunity to share in the benefits of improved instruction and services provided by the College.



**Delta College**

*Experience the Delta Difference*





# Profile of Our Students

When Delta College opened its doors in September, 1961, there were 1,700 students, whereas in the Fall Semester of 2000, approximately 9,400 academic and skilled trades students plus 890 community education students were enrolled in courses and programs on the Campus and throughout 30 neighborhood centers. Who are these students and why do they enroll at Delta? Actually, there is no Delta College student stereotype. Students differ considerably in their ethnic, social, and economic backgrounds and their educational goals. Most students (about 83.8%) reside in the tri-county district and more students are enrolled on a part-time basis than those attending full-time because most students are also working full or part-time. Some are rich, some are poor, most are neither, but approximately two-thirds (64%) of students enrolled for six or more academic credits receive some form of financial aid. Some have precise career plans while others want to explore before they decide; some are taking classes for personal enrichment reasons. What most have in common, though, is that they are seeking to learn and improve their lives. Over the years, students have been asked about their reasons for choosing and attending Delta and the five major reasons given have been: location of Delta (close to home and/or work); curriculum or programs offered; low costs; course work relevant to goals; quality of instruction. Figures based on Fall Semester 2000 (pertains only to students enrolled in academic courses). The diversity of students at Delta College is illustrated below.

## Class Designation

Freshmen .....	63.1%
Sophomores .....	36.9%

## Student Age Distribution

19 years old and under .....	31.3%
20-24 .....	33.9%
25-29 .....	11.1%
30-44 .....	18.0%
45 and over .....	5.2%
Unknown .....	0.2%

## Gender

Females .....	57.9%
Males .....	42.1%

## Geographic Residences

Saginaw County .....	41.6%
Bay County .....	27.9%
Midland County .....	14.1%
Other Michigan Counties .....	16.9%
Out of State .....	0.4%

## Ethnic Backgrounds

Caucasian .....	82.1%
African-American .....	7.1%
Hispanic .....	4.1%
Not designated .....	3.1%
Multi-racial .....	1.4%
Asian .....	0.9%
Native American .....	0.7%
International .....	0.7%

## Declared Program Choices

Career Education Programs .....	41.8%
Transfer Programs .....	30.5%
Deciding .....	19.0%
Guests & Dual Enrolled .....	5.3%
Personal Enrichment .....	1.5%

## Attendance Distribution

Day hours only .....	30.1%
Evening hours only .....	13.8%
Weekends only .....	0.3%
Telecourse/Internet only .....	0.9%
Combinations of above .....	54.9%

## ◆ MISSION STATEMENT

Our mission is to be an innovative and responsive community college dedicated to meeting the diverse educational and personal growth needs of our students by providing excellent learning opportunities and support services.

\* \* \* \*

The College Mission reflects our Values.

## ◆ VALUES STATEMENT

At Delta College, we value our students, our employees, and our constituents. As we hold the institution in trust for them, we aspire to these ideals:

**The Learning Experience and the Pursuit of Knowledge:** Our students and our personal and intellectual growth depend upon the pursuit of knowledge and an appreciation for life-long learning. **Academic Excellence:** Our dedication to academic excellence encourages and supports the quest to maintain high academic standards. **Access:** Our commitment to an open-door policy ensures that our constituents may exercise their legitimate right to access College services. **Professional Integrity and Collegiality:** Our ethics and our respect for others guide our relationships, professional activities, and the performance of our duties to the best of our ability. **Academic Freedom:** Our dedication to the free exchange of ideas and information promotes our growth as an educational institution. **Quality:** Our commitment to quality programs and services ensures our response to a dynamic environment through self-evaluation and innovation. **Diversity:** Our College reflects the needs of our diverse College community. **Shared Governance:** Our trust in shared governance compels us and our students to contribute to the evolution of College policies and operating procedures. **Community Leadership and Service:** Our local and global participation and leadership exemplify dedication to our mission. **Environmental Safety:** Our obligation to clean, comfortable, safe, efficient, and current facilities aids in the fulfillment of the Delta College mission.

## ◆ OUR VISION FOR DELTA COLLEGE

Delta College is a learning centered institution that focuses on the diverse post-secondary learning needs of the community. The College provides quality learning opportunities and recognizes learning can take place 24 hours a day, every day, in and out of the classroom, and on and off campus. Learning is our primary measure of success.

In reaching our vision we will: Provide diverse learning experiences which give our students an advantage in the workplace, at baccalaureate institutions, and in access to global opportunities • Expand our impact by providing learning opportunities for new and diverse groups of constituents • Become a focal point for learning and cooperative development in the Tri-Counties • Increase access to learning opportunities beyond our conventional boundaries of location and time • Develop our physical facilities and our technological capacity in order to promote learning by students and staff • Be creative in the acquisition and use of resources to facilitate learning • Develop a faculty and staff that are committed to respecting our students' diversity of culture and educational backgrounds, and equally committed to providing diverse learning opportunities to address students' unique needs • Be active in identifying and addressing our communities' educational needs, and be active across the College in promoting our capacities, services, and opportunities • Improve student success by assessing educational experiences for our students and continually work to make these experiences better.

## ◆ GUIDING PRINCIPLES

The implementation of our College Mission and its underlying Values are supported by certain Guiding Principles.

Based on our Mission and Values Statements, Delta College is committed to:...providing a range of programs, opportunities, and experiences that enrich the lives of the residents of our community....continuously improving and regularly measuring the quality of all of our programs and services....accepting the challenge of our open door policy by providing programs and services appropriate to our students' needs and backgrounds....providing services to help students overcome obstacles that impede the achievement of their educational goals....working with K-12 districts, other colleges and universities, and business and industry to share and respond to each others' needs....creating an environment that fosters appreciation and respect for the uniqueness of each individual....expanding our students' cultural and global awareness....the free exchange of all ideas for their own sake as well as for their potentially practical applications....providing a work environment which supports the professional development of all 'College' employees....shared governance, understanding that we are all members of the same College community with the privilege of ownership and the obligation of participation....employee involvement in the community.





# THE ENROLLMENT PROCESS

- ◆ Academic Calendar
- ◆ Admission and Pre-Enrollment Information
- ◆ Financial Aid
- ◆ Registration



# Academic Calendar 2002-2003

	Spring '02 Semester 14 Weeks	Spring '02 Session 7-1/2 Weeks	Summer '02 Session 6 Weeks	Fall '02 Semester 15 Weeks	Winter '03 Semester 15 Weeks	Spring '03 Semester 14 Weeks	Spring '03 Session 7 Weeks	Summer '03 Session 7 Weeks
Activity								
Applications Available for Financial Aid	Jan. '01	Jan. '01	Jan. '01	Jan. '02	Jan. '02	Jan. '02	Jan. '02	Jan. '02
Admission	..... Continuous .....							
District Status Change	..... One Week Before Your Registration .....							
Last Day Readmission for Web/Phone Registration	March 1	March 1	March 1	March 22	Oct. 18	Feb. 28	Feb. 28	Feb. 28
Schedule of Academic Classes Available	Early March	Early March	Early March	Early March	Late October	Early March	Early March	Early March
Web/Phone Registration Begins <sup>1</sup>	Mid-March	Mid-March	Mid-March	Early April	Late October	Mid-March	Mid-March	Mid-March
Weekend Classes Begin	May 12	May 12	July 7	Aug. 24	Jan. 5	May 10	May 10	July 12
First Day of Semester/Session <sup>2</sup>	May 12	May 12	July 7	Aug. 24	Jan. 5	May 10	May 10	July 7
Last Day Add Without Instructor Signature <sup>2,4</sup>	May 17	May 15	July 10	..... Before Class Begins .....				
Last Day of Offset <sup>2</sup>	..... 25th Calendar Day from Start Date .....							
Last Day for 100% Refund <sup>2</sup>	..... 7th Calendar Day from Start Date .....							
Last Day for 50% Refund <sup>2</sup>	..... 11th Calendar Day from Start Date .....							
Last Day to Audit <sup>2,3</sup>	..... Last Day of 50% Refund Period .....							
Last Day Drop With No Grade <sup>2,3</sup>	..... Last Day of 50% Refund Period .....							
Last Day to Withdraw With "W" <sup>2,3</sup>	June 28	June 6	July 26	Oct. 18	Feb. 26	June 30	June 6	July 31
Last Day to Apply for Graduation	..... Last Day of the Month Before Completion of Final Requirements							
Last Day to Apply for Pass/No Credit <sup>1,2,3</sup>	July 26	June 21	Aug. 9	Nov. 19	April 5	Aug. 5	June 20	Aug. 15
Last Day to Withdraw With "WE", "WP", or "WI" <sup>2,3</sup>	July 26	June 21	Aug. 9	Nov. 19	April 5	Aug. 5	June 20	Aug. 15
Incomplete Deadline for Required Coursework <sup>3</sup>	Dec. 1	Dec. 1	Dec. 1	Apr. 1	Dec. 1	Dec. 1	Dec. 1	Dec. 1
Health Validation Applications Accepted <sup>1</sup>	June 28-Aug. 17	June 28-Aug. 17	June 28-Aug. 17	Oct. 18-Dec. 16	Feb. 26-April 28	June 30-Aug. 25	June 30-Aug. 25	June 30-Aug. 25
Holidays: No Classes	May 27 July 4	May 27	-----	Aug.31-Sept.3 Nov.27-Dec.1	March 2-8 April 20	May 24-26 July 1-6	May 24-26	July 1-6
Last Day of Semester/Session <sup>2</sup>	Aug. 17	July 3	Aug. 17	Dec. 15	April 27	Aug. 24	June 30	Aug. 24

## NOTATIONS

<sup>1</sup>Dates subject to change. Complete registration information, including Special Phone Registration dates for Health and Nursing First Clinical Courses, is listed in each semester's Academic Classes Schedule booklet. See Section III, Programs of Study, Health Program Procedures, page 28.

<sup>2</sup>Some courses begin and end other than these dates; see each semester's Academic Class Schedule booklet. Deadline dates apply only to regular semester/session classes; check with the Records & Registration Office for deadlines for these courses.

<sup>3</sup>For grading policies, see Section IV, Academic Policies and Information, Grading System, pages 90-91.

<sup>4</sup>Exception: Distance Learning Courses require instructor permission after the start date of class.  
Non-Credit Classes: Registration dates, times and procedures are different from above; consult your Non-Credit Schedule of Classes published each semester.





# Admission and Pre-Enrollment Information

## Admission Criteria

Delta College is open to all individuals included in **any one** of the categories listed below. Admission to Delta College does not ensure enrollment in all courses or program areas. Many courses have prerequisites; some programs have additional admission requirements. Academic programs of study that require specific prerequisites or eligibility requirements are outlined in Section III of this catalog.

If you are included in **any one** of the following categories, you are encouraged to apply for admission:

### Regular Admission

- graduate of an accredited high school
- non high school graduate whose high school class has graduated
- home school graduate at least 17 years old
- person with an official General Education Development (GED) credential (certificate/diploma)
- person from another country entering the U.S. for college educational purposes under an authorized student visa approved by Delta College

### Conditional Admission (must reapply each semester)

- guest student from another college/university
- home school graduate under age 17
- student currently enrolled in secondary level accredited school or home school

A committee consisting of the Dean of Faculty, Dean of Student and Educational Services, and the Director of Admissions may make exceptions to this policy based upon the individual having the ability to benefit from the College's educational programs.

**\*Note** If you do not have a high school diploma or have not successfully completed the GED, you may be restricted from receiving federal financial aid if "ability to benefit" criteria are not met. We encourage you to contact the Admissions Office, Financial Aid Office, or the Assessment/Testing Services Office for detailed information concerning "ability to benefit" criteria.

### Admission Dates

Although Admission Applications are accepted and processed continuously, we encourage you to submit your Application at least 30 days prior to your enrollment period and preferably as early as 6 to 8 months. **If you plan to request financial aid, it is essential for you to apply for admission and for financial aid 8 to 10 weeks prior to registration.**

Our traditional starting dates are:

- Fall Semester (late August)
- Winter Semester (early January)
- Spring Session (early May)
- Summer Session (early July)

## Admission Procedures

Admission fee: \$10 (one-time, non refundable)

You will be admitted at Delta College as:

### Regular Admission

1. **First Time In College:** If you have not previously attended any college or university prior to enrolling at Delta College.
2. **Transfer:** If you have attended another college or university prior to enrolling at Delta College.

3. **Re-Entry/Readmitted:** If you are a former Delta student who has not taken a course since 1984.
4. **International:** If you are a resident of another country. Delta College is authorized under federal law to enroll non-immigrant students on F-1 student visas.

### Conditional Admission (must reapply each semester)

1. **Guest:** If you are enrolled at another college or university and desire concurrent admission.
2. **Dual Enrollment/Fast Track:** If you are enrolled in grades 9-12 and approved by your high school counselor and/or principal.
3. **Special Enrollment (Home School/Junior High/Other):** If you are "academically qualified" this status provides a parallel route for you to enhance your present curriculum, enrich your academic experience, and earn college credit while doing so.

Delta College complies with applicable federal and state laws prohibiting discrimination, including Title IX of the education amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990 and the Michigan Handicapper's Civil Rights Act.

Completed Admission applications must be returned to the Admissions Office. Please review the following admission categories and follow the procedures outlined.

1. **High School Seniors:** If you plan to enroll the summer or fall after your June graduation, you need to complete an Admissions Application and give it to your high school counselor or principal. Ask your high school to send your application, along with your current transcript to the Admissions Office. Be sure to request that a **final transcript** be sent upon your graduation.
2. **New Students/Adults out of High School/Transfer:** Complete an Admissions Application and return it to the Admissions Office. You need to request each previously attended high school, education center, and/or college to send a copy of your *official transcript* to the Admission's Office. A photocopy of one of the following must be submitted with the application to complete the package for residency verification.
  - a. Drivers License reflecting the current address of the bearer or Secretary of State Personal Identification Card.
  - b. Voter Registration Card reflecting the current address of the holder.
  - c. Current property tax receipt for the place of residence.
  - d. Other legal documents such as court-issued guardianship papers.
3. **Guest Students:** If you are attending another Michigan college and wish to take Delta courses on a Guest status, you must complete Part I of the *Michigan Uniform Undergraduate Guest Application* (available at your current institution or from Delta College). Ask the Registrar at your college to complete Part II and to forward it to Delta's Admissions Office. Be sure to check with your current institution to determine if your Delta courses will satisfy requirements. Upon the completion of your Delta courses you will need to request an Academic Transcript be sent to your current institution.
4. **Re-Entry/Readmitted Students:** If you are a former Delta student who has not taken a course since Winter 1984, you need to be readmitted. Re-entry may be accomplished by telephoning the Admissions Office or by completing an Admissions Application, available from the Admissions Office. You are encouraged to see a counselor or advisor prior to registering for classes. Individual assessment also may be recommended.



**5. Dual Enrolled/Fast Track Students:** If you plan to enroll in Delta courses and in high school courses during the same semester, you need to submit a special Dual Enrollment Application for each semester in which you intend to enroll. This application, available at your high school, needs to be signed by your parent and high school counselor or principal. Request that your high school send a current copy of your transcript to the Admissions Office.

**6. Special Enrollment Students:** If you are at least 14 years old and attend junior or high school or are home schooled you may be admitted for one semester at a time under Special Enrollment. This program is provided to supplement your educational plans and to afford educational enrichment in courses and academic areas not available in the student's school or home school setting. You will need to submit a special Dual Enrollment Application. The application will need to be signed by your parent and high school counselor or principal (only parent if home schooled). The parent or legal guardian is responsible for all fees, tuition and transportation. **You will need to have ability to read and write at the college level.** An assessment exam will be administered to determine your eligibility.

If you are younger than 14 and can demonstrate the academic and social skills appropriate for college-level coursework you may be admitted for one-semester at a time under Special Enrollment. You will need to submit a completed Dual Enrollment Application at least 30 days prior to the beginning of the anticipated semester of enrollment. A letter of support from the school's counselor or principal or your parent must accompany the application if you are home schooled. You will be required to take a college determined assessment exam for proper course placement. A College committee will interview you (accompanied by a parent or guardian) to determine your eligibility for the course and will make a recommendation to the Director of Admissions.

**7. International Students:** If you are not an U.S. citizen or a permanent resident and you are requesting an I-20 form, you need to complete the International Admissions Application.

## Transcripts

If you are a new student in any category except Guest, or if you are a returning student who has attended another college or university since Delta, you need to request immediately that your official transcript be sent to: Delta College, Admissions Office

1961 Delta Road, University Center, MI 48710

Official transcripts include: high school, college, university, GED, and adult education course work.

## After You Apply

After you apply you will receive a prompt response to your Admission Application. Applications submitted in person will be processed immediately. Upon acceptance, you will be issued a student number, and further information about assessment, orientation, advisement, and/or registration procedures. After being accepted, most new and some returning students are required to participate in pre-enrollment procedures such as assessment, orientation, and advisement. Please see page 16 for further information.

## Admissions Advising/Campus Tours

We invite you to call with any questions you may have and especially invite you to make an appointment with an Admissions Representative. We'll discuss pre-enrollment procedures, the financial aid process, and general college information. The Admissions Office phone number is: (989) 686-9093; from Midland/Auburn, phone 495-4000, ext. 9093; or from Birch Run/Frankenmuth/Reese/Vassar, phone 758-3400, ext. 9093.

## International Student Admissions

Delta College welcomes applications for International Admissions and is authorized under federal law to admit and enroll non-immigrant alien students. In order to obtain a visa for entry into the United States on an F-1 Student visa status, you must present to the U.S. council abroad a valid passport, proof of sufficient finances, and a completed I-20 form.

An I-20 form (Certificate of Eligibility) is issued to admitted Delta students after the college has determined that you have met the following conditions:

**1. Academic Requirements:** You must be 18 years of age or older and have successfully completed a course of study equivalent to high school level. You are required to submit certified copies (in English) of your high school leaving certificate national and international exams, and transcripts, which reflect courses and marks earned during the last three years of high school.

**2. Language Proficiency:** If you are from a country where English is not the official native language, you must be proficient in English to pursue your studies or you must make arrangements to enroll in an English Language Center prior to acceptance. English proficiency means that you speak, write, and read English fluently. Such fluency is necessary to insure your enrollment, proper placement, and success in achieving your educational goals.

You must furnish Delta College with one of the following:

- Proof of having received a minimal score of 500 on the paper based version of TOEFL (Test of English as a Foreign Language) **or**,
- proof of having received a minimal of 173 on the computerized version of TOEFL (Test of English Foreign Language) **or**,
- Proof of successful completion of ESL program **or**,
- Official transcripts documenting successful completion of an advanced course in English from a licensed English Language Center. An additional test and interview may be required to establish English proficiency before enrollment. Information about TOEFL can be obtained by writing TOEFL, P.O. box 6151 Princeton, NJ 38541.

**3. Financial Verification:** You are required to submit a completed affidavit of support and an up to date financial statement from a sponsor and their bank, which testifies to the sponsor's willingness and ability to support you while you are at Delta. If your government or an organization does not sponsor you, you must submit a bank statement, which testifies to the existence of enough funds for school and living expenses in your family's account for attendance. All college tuition is due and payable in full at the time of registration. **Loans, scholarships, financial aid, and deferred payments are not available to international students.**

**4. Deadlines:** All documents such as applications, recommendations, official transcripts, financial statements of support, Affidavits, Certificates of English Proficiency, and medical reports must be in the Admissions Office at least **four months** preceding the semester you desire to be admitted.

Semester	Application Deadline	Semester Begins
Fall	May	Last week of August
Winter	September	Second week of January
Spring	January	Second week of May

**5. Medical Insurance:** After arrival and before registering for classes, you must purchase medical insurance with a reparation clause. Failure to do so or cancellation of the policy will result in you not being able to register for future semesters at Delta and notification will be given to Immigration and Naturalization Services that you are not enrolled.



6. **Verification/Academic Advisor/ Orientation/Assessment:** Upon arrival, you must verify visa status, provide a copy of the I-94 card from your passport, and provide a copy of the applicant information from the inside of the passport with the Admissions Office. Orientation and Assessment will be scheduled after arrival and prior to class registration.

**For answers to specific questions about enrollment, contact the international student admissions representative by e-mail ([admit@alpha.delta.edu](mailto:admit@alpha.delta.edu)).**

**Important notes:**

- Applications for admissions to Delta College will be mailed upon request. High school records submitted by friends or relatives on your behalf are not accepted. These "Official" records must be mailed directly to Delta College from your secondary school, college, or the Ministry of Education in your country. A \$10.00 admission fee (one time, non-refundable) must accompany the application.
- All documents must be original and certified copies and must be accompanied by official English transcripts. The principal or registrar of each school or college attended must sign the transcripts. You must not leave your country; language center or college before you receive official acceptance from Delta College.
- Students on an F-1 visa must enroll full-time (at least 12 credit hours per semester, per academic year) at Delta.

**International Students (all visa classifications except F-1 Student Visa):** International students range from permanent resident aliens to a visitor on any visa from an A visa to an R visa, including refugees and people with asylum. Certain restrictions may apply depending on which status you may hold in the United States.

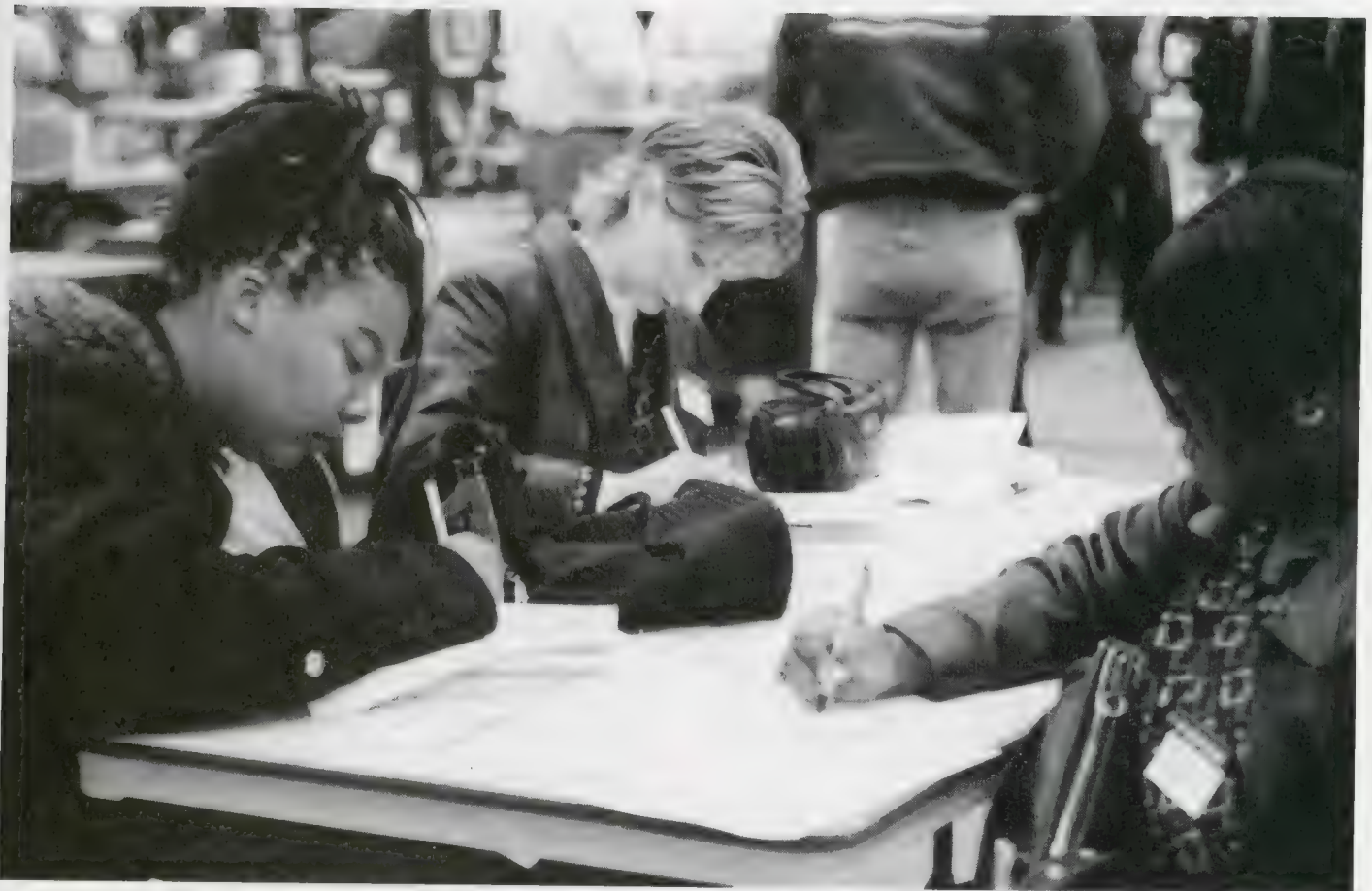
- **If you are a permanent resident alien (green-card holder)** and wish to attend Delta you may register either as a part time or full time student. Admission procedures for a permanent resident alien is as follows:

Submit a completed application with a copy of your green card (front and back), and also include a copy of your driver's license or State of Michigan identification.

- **If you possess refugee status or political asylum** in the United States and wish to attend Delta you may register either as part time or full time. Admission procedures for refugees and political asylum are as follows:

Submit a completed application for admission with a copy of your passport (if applicable), appropriate documentation showing your status, and a driver's license or state identification to show where you currently reside.

- **Admission requirements for all other visa holders** are as follows: Submit a completed application for admission with a copy of your passport, I-94 card, and a copy of the visa that you currently hold.







## Costs\*

Delta offers quality education at the most reasonable cost in the tri-county area.

\* Note: Costs are for the 2001-2002 academic year. Use for estimation purposes only.

### Tuition:

In-District .....	\$61.40 per credit
Out-District .....	\$84 per credit
Out-Of-State/International .....	\$120 per credit
Course Fees .....	Varies - See Class Schedule
Registration Fee .....	\$25 per semester
Multi-Registration Fee .....	\$25 per non-payment
Late Registration Fee .....	\$50 per semester
Admission Fee .....	\$10
Orientation Fee .....	\$ 0
Assessment Fee .....	\$ 0
Transcript Fee - Three to Five Days .....	\$ 0
Transcript Fee - Same Day .....	\$10

Library Fee .....	\$ 0
Tutoring Fee .....	\$ 0
Parking Fee (except violations) .....	\$ 0
Student Activities Fee .....	\$ 0
Graduation Fee .....	\$ 0
Late Graduation Fee .....	\$25
Diploma Fee .....	\$ 0
Michigan Community College Virtual Learning Collaborative (MCCVLC) Tuition:	
In-District (MCCVLC) .....	\$90 per credit
Out-District (MCCVLC) .....	\$130 per credit
Out-State (MCCVLC) .....	\$170 per credit

Other Costs: In addition to tuition and fees, you must be prepared for the other costs incurred when attending college. These include books, supplies, transportation, room and board, miscellaneous personal expenses, child care, and any costs associated with disabilities.

## Residency Policy and Guidelines

Educational costs at Delta College are shared by students, the taxpayers in the Delta College District, and the State of Michigan. Property taxes paid by residents of the Delta College District supplement student tuition and state aid for in-district status students; therefore, the tuition charged legal residents of the Delta College district is the lowest and students who are classified as out-of-state residents are charged the highest tuition. A student's residency classification is established when admitted to Delta College and may only be changed as detailed under No. 4 below.

**1. Residency Classifications:** A person will pay course tuition according to one of the following classifications of legal residence:

- In-District Status:** Legal resident\* of Bay, Midland, or Saginaw counties. (This is the Delta College District)
- Out-of-District Status:** Legal resident\* of Michigan but not of the above three counties.
- Out-of-State Status:** International students and all others not classified within a or b above.

\*A legal resident is one whose permanent, primary residence is where he or she intends to return whenever absent from college. A dormitory or apartment rented only for the period of time during college enrollment is not a permanent primary residence.

**2. In-District Criteria:** For tuition purposes, an in-district student is an American citizen or permanent resident **who can provide legal proof** of residence within Bay, Midland, or Saginaw counties **for at least three consecutive months** immediately preceding the first day of the semester in which the person plans to enroll.

**3. In-District students** whose families/spouses move out of the Delta College District during the time they are enrolled may retain their residency status as long as they are continuously enrolled at Delta College (defined as a minimum of one semester in each academic year).

**4. Proof of In-District Residence:** All students are subject to a check of their residency status at admission and registration. Students furnishing false information will be subject to disciplinary action. The following examples are types of documents which are considered in determining proof of in-district legal residency:

- A current/valid Michigan driver's license, Michigan Secretary of State I.D. card, or valid Michigan motor vehicle registration in the student's name indicating a permanent address within Bay, Midland, or Saginaw counties.
- A property tax receipt from Bay, Midland, or Saginaw counties.
- A current voter registration card indicating an in-district address.
- Other legal documents such as court-issued guardianship papers.

**5. Change of Residency Status:** While attending Delta College, students may petition the Dean of Student & Educational Services or Director of Admissions to change their residency classification. Petition forms are available in the Admissions or Records and Registration Offices and must be submitted, with proof of in-district residence (see No. 4 above), at least one week prior to the student's registration date. Students must meet the criteria stated in No. 1. Any adjustments made in tuition due to a change in residency status shall not be retroactive nor changed within a semester.

**Note: Guest students** from other colleges and **international students** on a student, working, or visitor visa should not expect to have their residency status changed while attending Delta College, as the definition of legal resident in No. 1 above has not been met.

If you have questions regarding residency, please contact the Admissions Office at (989) 686-9093; from Midland/Auburn, 495-4000, ext. 9093.





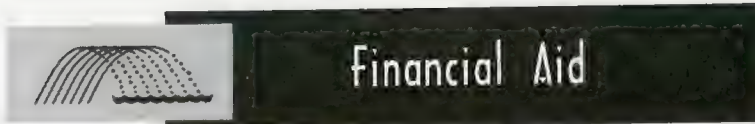
# Financial Aid Programs

PROGRAMS	WHO IS ELIGIBLE					HOW MUCH	HOW TO APPLY	
FEDERAL PROGRAMS	A	B	C	D	E		F	
FEDERAL PELL GRANT	✓	✓	✓		✓	Awards range from \$400-\$4,000.	✓	
FEDERAL WORK-STUDY	✓	✓	✓		✓	Awards range from \$500-\$1,850 per semester. The student earns these funds through part-time employment and receives a paycheck every two weeks.	✓	
FEDERAL SUPPLEMENTAL EDUCATIONAL OPPORTUNITY GRANT	✓	✓	✓		✓	Awards range from \$100-\$1,000	✓	
FEDERAL STAFFORD LOAN (a) Subsidized (b) Unsubsidized (you pay interest while in school)	✓	✓	✓		✓	a) Cost minus Family Contribution minus Other Aid = Need. b) Cost minus Other Aid (including subsidized loan) = Need.	✓	Request Form from Delta College Financial Aid Office.
FEDERAL PARENT LOAN (PLUS)	✓	✓	✓		✓	Parents of dependent students.	✓	Obtain PLUS Loan application from local bank or credit union.
VETERANS BENEFITS	✓				✓	Veterans who are eligible or certain dependents of deceased or disabled veterans.		Contact Veterans' Services at Delta College.
<b>STATE OF MICH. PROGRAMS</b>								
MICHIGAN COMPETITIVE SCHOLARSHIP PROGRAM	✓	✓	✓	✓		Students who qualify as semi-finalists on ACT test. Awards made by State of Michigan Department of Education.	✓	Take the ACT test in high school. If eligible, list Delta College (002251) in Step Five of FAESA.
MICHIGAN EDUCATIONAL OPPORTUNITY GRANT PROGRAM	✓	✓	✓	✓	✓		✓	Maximum award is \$1,000 per year.
MICHIGAN ADULT PART-TIME GRANT	✓	✓	✓	✓	✓	Students who are part-time, independent, and out of high school for a minimum of two years.	✓	Maximum award is \$600 per year for a period of up to two years.
MICHIGAN MERIT AWARD SCHOLARSHIP						Must score at Level I or Level II on the MEAP		Notification of award by MEAP Board
TUITION INCENTIVE PROGRAM (TIP)	✓	✓		✓		Students under the age of 20 at the time of high school graduation or GED completion and who have been determined eligible by the MI Family Independence Agency (FIA) based on Medicaid receipt.		Contact high school guidance counselor, FIA or the Delta College Financial Aid Office for a TIP application prior to high school graduation or GED completion.
MICHIGAN INDIAN TUITION WAIVER				✓		Must have written certification from tribe of being at least 25% Native North American and proof of one year Michigan residency.		Obtain ITW application from Student's Tribal Office.
ATTENDANCE COST PROGRAM	✓	✓	✓			Low income single parents, displaced homemakers, and non-traditional students enrolled in vocational/community services programs.	✓	Contact Single Parent/Sex Equity Coordinator for determination of eligibility.
MICHIGAN WORK-STUDY	✓	✓	✓	✓	✓		✓	Awards range from \$500-\$1,850 per semester. The student earns these funds through part-time employment and receives a paycheck every two weeks.
MICHIGAN ALTERNATIVE STUDENT LOAN PROGRAM (MI-LOAN)	✓	✓	✓			Cost minus Financial Aid = Need. Borrower must pass credit worthiness test.	✓	Obtain MI-LOAN packet from bank or credit union or Delta's Office of Financial Aid.
<b>DELTA COLLEGE PROGRAMS</b>								
BOARD OF TRUSTEES SCHOLARSHIP	✓				✓	Tri-County high school graduates recommended by their guidance counselors. Based on academic excellence.		Contact high school guidance counselor.
ADULT EDUCATION SCHOLARSHIP	✓				✓	Tri-County adult ed graduates recommended by their high school directors. Based on academic excellence.		Contact the director of adult education at your high school.
PRIVATE DONOR SCHOLARSHIP	✓	✓			✓	Students must meet the selection criteria of the various donors. In most cases, students should have a GPA of 3.0 or better and show financial need.	✓	Obtain the Delta College scholarship application from the Financial Aid Office.
SHORT TERM LOAN						Students who demonstrate ability to repay and pass credit check.		Obtain application in Finance Office. \$25 non-refundable fee.

- A. Must meet standards of academic progress for financial aid recipients.  
 B. Must not owe a refund or be in default on any Title IV Aid.  
 C. Must demonstrate financial need as determined by the federal formula.  
 D. Must be a Michigan resident.

- E. Must be enrolled in a Delta College academic degree or certificate program.  
 F. Complete and submit the free application for Federal Student Aid according to the directions provided. Be sure to list Delta's Title IV Code (002251) in Step Five of the application.





The Delta College Financial Aid Office administers a comprehensive program of financial assistance to help you with the cost of attending college. The Federal government, the state, Delta College, and organizations are sources of assistance if you demonstrate financial need and/or outstanding scholarship. Application forms required to begin the financial aid process are available from area high schools and the Admissions and Financial Aid Offices at Delta College. Forms for the next academic year (August - May) are available the preceding January. You should obtain the application form and follow the application procedures as early as possible. Also, you may apply over the Internet at <http://www.fafsa.ed.gov>. The entire application process may take from four to six weeks. Applications filed less than two months prior to registration may not be processed in time for registration and may be received too late to be awarded some types of aid.

### Application Procedures

1. Complete the Free Application for Federal Student Aid (FAFSA). If you are a returning student, you should complete the Renewal Application mailed to you by the federal government. If you do not receive one by early January, you should complete the FAFSA. Be sure that you indicate Delta's College Code, 002251, in Step Six, on the FAFSA so that we can receive your FAFSA information electronically. When you have read the directions carefully and accurately answered every question, sign the form and follow the mailing instructions. This will generate a Student Aid Report (SAR), which will be sent directly to you.
2. When you receive your SAR, look it over carefully to make sure it is correct, since the information on this SAR will be used to determine your eligibility for the Federal Pell Grant and for most other types of aid. If corrections are needed, take the SAR to the Financial Aid Office so that we can submit the corrections electronically.

### Eligibility for Aid

To be eligible for aid you must be a U.S. citizen or permanent resident of the U.S., must not be in default on any student loan and not owe a repayment on any Federal grant. You must, in most cases, enroll and attend at least half-time, maintain satisfactory academic progress as defined by the Delta College Standards of Academic Progress policy, and be enrolled in a program of study leading to a certificate or degree. If you do not have a high school diploma or GED, you must demonstrate your ability to benefit by receiving minimum scores as determined by the U.S. Department of Education on one of the approved tests by the Department. If you do not have a diploma or GED, the ability to benefit applies to you and you should contact the Delta College Assessment/testing Services Office.

Once you have met the eligibility requirements listed above you will be considered for all aid programs administered by Delta. The financial assistance offered to you may include any of the programs listed on the chart on the previous page. You will receive an award letter showing the amounts and types of financial aid available based on full-time attendance. Enrollment at less than 12 credits will reduce your award accordingly.

At full-time enrollment, you may receive a maximum of one-half of the annual Pell Grant for which you are eligible in any one semester. If you do not receive Pell Grant for full-time enrollment for both Fall and Winter Semesters, you may be awarded up to the unused portion of your Pell Grant for the Spring Semester. Other grants, scholarships, and work-study are awarded to Spring Semester applicants as available.

Stafford Loan eligibility is based partly on the anticipated enrollment status of the applicant. If you register at a status below that which was used to determine your eligibility for the loan, your eligibility will have to be recalculated and the approval may have to be cancelled. All Federal Stafford and Parent (PLUS) Loans are disbursed in two payments, with checks co payable to the borrower and the College. The earliest that any disbursement check for a semester is released is after you have completed 30 days of attendance.

**Every Stafford Loan borrower must attend an Entrance Loan Information Meeting at Delta College before receiving their first Stafford Loan check.**

### Rights of Financial Aid Applicants

1. You have the right to know what financial aid programs are available.
2. You have the right to know the deadlines for submitting applications for each of the financial aid programs available.
3. You have the right to know how financial aid will be distributed, how decisions on that distribution are made, and the basis for these decisions.
4. You have the right to know how your financial need was determined.
5. You have the right to know what resources (such as parental contribution, other financial aid, your assets, etc.) were considered in the calculation of your need.
6. You have the right to know how much of your financial need as determined by the institution has been met.
7. You have the right to request an explanation of the various programs in your student aid package.
8. You have the right to know the Delta College refund policy.
9. You have the right to know what portion of the financial aid you received must be repaid, the payback procedures, the length of time you have to repay, and when repayment is to begin.
10. You have the right to know how Delta College determines whether you are making satisfactory academic progress and what happens if you are not.

For an explanation of any of the above rights, please come in to the Office of Financial Aid and see a Financial Aid Representative.

### Responsibilities of Financial Aid Applicants

1. You must complete all application forms accurately and submit them on time to the right place.
2. You must provide correct information. In most instances, misreporting information on financial aid application forms is a violation of law and may be considered a criminal offense which could result in indictment under the U.S. Criminal Code.
3. You must return all additional documentation, verification, corrections, and/or new information requested by either the Office of Financial Aid or the agency to which you submitted your application.
4. You are responsible for reading and understanding all forms that you are asked to sign and for keeping copies of them.
5. You must accept responsibility for all agreements that you sign.
6. You must perform the work that is agreed upon in accepting a Work-Study job.

Financial Aid recipients must meet Standards of Academic Progress to continue to receive aid. See page 95 for Standards of Academic Progress for Financial Aid Recipients.





# Registration

Registration at Delta generally takes place three times a year, starting in April for the Fall Semester, starting in early November for the Winter Semester, and starting in March for the Spring/Summer Semester.

## The Registration Process

Any student - new, returning, readmitted, transfer, and guest - may register by touch-tone phone, on-line, or in person.

- As a new student, you are eligible to complete registration after your orientation session.
- As a returning student you may be given priority to register by touch-tone phone or on-line according to the number of credits you have completed at Delta (including a maximum of 38 transfer credits).
- If you are designated an official guest or official transfer student by the Admissions Office, you may register by at the time all students can register.

Each semester, late registration periods are held on the Campus for any student who has missed the above registration opportunities.

You are expected to register during the official registration periods. You may register after the completion of the official registration periods but before the midpoint of a course with the written permission of the instructor. You may not register past the midpoint for any course. It is College policy that if you have financial obligations to Delta College, you will not be allowed to register until the obligations have been paid or cleared.

For detailed information regarding phone and Campus registration, you should consult the Academic Class Schedule booklet, which is published each semester and available in Records and Registration, Counseling, Admissions, the Planetarium and Learning Center in Bay City; the Ricker Center in Saginaw; and the Midland Center, prior to the start of each registration period.

**Cancelled Courses:** The College reserves the right to cancel any course which does not have a sufficient enrollment of students to warrant its continuation. You should attempt to add another course or apply for a refund at Records and Registration. You may also request a refund by phone or letter to Records and Registration.

**Course Schedule Changes:** You are expected to complete the courses in which you are registered. If a change is necessary, you must file an add/drop form at Records and Registration, or send a letter, e-mail, or fax to Records and Registration requesting the drop or withdrawal. The date this form is received or the postmark on the envelope is the official add/drop date for the course.

**Added Courses:** You may add courses until the first session begins (Exception: Distance Learning courses require permission after the start date of the course). Courses added after these days require written permission of the instructor or division chair. You may not register past midpoint of any course.

**Student-Initiated Drops:** For courses officially dropped within the refund period of the course, no grade will be reported or recorded on the official College transcript. If the course is officially dropped after the refund period through mid-course, you will receive a grade of "W."

When an official withdrawal/drop is initiated after mid-course, the grade will be a "WE" (withdrawal failing) or "WP" (passing course work at date of withdrawal/drop). Official withdrawal/drops are allowed through four-fifths of the course (the 12th week of a 15-week semester courses).

If you do not officially withdraw/drop after mid-course, the instructor will assign an appropriate final letter grade ("A" through "E") in relation to total course requirements achieved.

**Instructor-Initiated Drops:** An instructor has the option of authorizing a grade of "WI" for you if you have missed an excessive number of course hours of instruction or you lack the course prerequisites. This authorization may be initiated through four-fifths of the course and reported to Records and Registration.

Upon receipt of an authorization, Records and Registration will notify you in writing of, and the reason for, the drop.

If you wish to appeal an instructor-initiated drop, the contact must be with the course instructor. If necessary, mediation may be requested of the appropriate Division Chair. All appeals must be in writing, signed by you as the person requesting the appeal, and received within one week following notification of the drop.

**Withdrawal from College:** To completely and officially withdraw (drop all courses), you must complete an add/drop form at Records and Registration. Withdrawal may also be requested by letter, fax, or e-mail. The date this form is received or the postmark on the envelope is the official withdrawal date.

## Course/Credit Load

If you are a full-time student, course load is 12-18 credits in a 15-week semester and 6-9 credits in a 7 1/2-week session. To register for a course load in excess of these limits, you must obtain special permission from a counselor before registration. Approval of an excess course load depends upon your previous academic record.

## Scholarship Students Experience

the **Delta**  
Difference

"My education is my highest priority and I cannot express my gratitude enough. Receiving financial assistance to cover tuition costs is a tremendous relief. It relieves the worry and stress completely, allowing me to concentrate solely on my academic success."

Laurie B. Mates



## Tuition and Fees

Tuition and fees must be paid in total at designated times (see Academic Class Schedule booklet) each semester or session, and may be paid by cash, check, Visa, Discover or MasterCard, or charged to approved financial aid. Tuition is assessed by credit based on your residency status. The per-credit tuition rate for each semester is published in the Academic Class Schedule booklet and is subject to change without prior notice by action of the Board of Trustees.

Fees are charged for specific courses. Fee information is listed in the Academic Class Schedule booklet and subject to change without prior notice.

If you are a resident of the Delta College district, 60 years of age or older, you may register for courses offered by the College and receive a grant reducing the amount of tuition due by 50%. The grant does not apply to fees (registration, technology, contact hour, course, etc.), books, supplies, trip costs, or other special fees. The College reserves the right to exempt certain courses or programs from grant eligibility. To be eligible for the Senior Citizen Grant Program, you must have a Delta College identification number. The identification number is issued by the Admissions Office after completing a brief application form, which requires proof of age.

A registration fee of \$25 is charged to each academic student once each semester or session. A registration fee of \$7 is charged to each non-credit student once each semester or session. Students registering in both academic and non-credit courses will pay both registration fees once each semester or session.

A late registration fee of \$50 is charged to students whose first registration is after the 100% refund period for any of their courses.

A multi-registration fee of \$25 is charged to students who register, do not pay by the deadline, and then re-register for a course.

**Textbooks and Equipment:** You are required to purchase your own textbooks, supplies, personal attire (i.e., lab coats, clinic shoes, etc. as required by courses), special equipment and tools, and attire and equipment for physical education courses. Most of these items may be purchased at the College Bookstore, which is located in the Commons/Food Court area and open during all College registration hours.

## Refund Policy

You may drop courses at Records and Registration in person. You may also drop by mail, fax, or e-mail as deadlines may fall on Saturday or Sunday, when offices are closed.

### Tuition and Special Course Fee:

**100% refund:** from the official start date and through the 7th calendar day\* (including the first day of class, Saturday, Sunday and holidays).

**50% refund:** from the 8th through the 11th calendar day\* (including the first day of class, Saturday, Sunday and holidays) of the official start date of the course.

**No refund:** after the 11th calendar day (including the first day of class, Saturday, Sunday and holidays) of the official start date of the course.

### For courses less than four weeks but more than 2 days:

**100% refund:** through the first quarter of the total days\*\* of the course.

**50% refund:** through the second quarter of the total days\*\* of the course.

**No refund:** after the second quarter of the course.

### For one or two day courses:

**100% refund:** before the start date of the course.

**No refund:** after course begins.

Courses which have nonrefundable tuition or course fees are noted in the schedule booklet.

### Registration Fee

No refund, unless all courses are cancelled by the College.

### Offset

During the 12th through the 25th day from the official start date listed in the schedule, students are permitted to offset equal credits and course fees within the same academic discipline (for example, switching from one ENG course to another ENG course, but not from an ENG course to a MTH course) with the written recommendation of their instructors through the add/drop procedure. For credits or fees added in excess of credits dropped, additional tuition and fees must be paid. During this period, grades of "W" will not be assigned to courses dropped through the offset process. Offset cannot be done between sessions (for example, dropping an ENG course during the first 7 1/2 week session and adding an ENG course during the second 7 1/2 week session or dropping a MTH course during the Spring 7 1/2 week session and adding a MTH course during the Summer 6 week session).

### Financial Aid Recipients

For students receiving Federal financial aid, funds are returned to programs according to Federal guidelines. Funds are returned in order to Federal Loan Programs, Federal Pell Grant, Federal SEOG, and to other Title IV aid programs.

Students receiving Federal aid who withdraw completely, see the Financial Aid for details of the Return of Funds policy that is in place for all recipients of Federal financial aid.

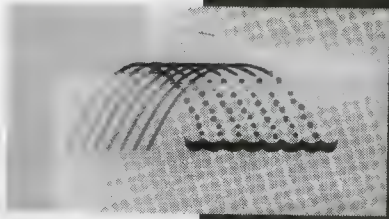
### Special Refund Consideration

Such consideration is available for drops due to medical reasons or death by submitting a medical statement to the Records & Registration Office through the offset period.

\*Calendar day is defined as all the days of the week including Saturday and Sunday.

\*\*Total days is defined as all the days of the course including the start date to the end date listed in the schedule booklet including Saturdays and Sundays.





# PROGRAMS OF STUDY

- ◆ Transfer Programs
- ◆ Transfer Procedures
- ◆ Career Education Articulations/Transfer Agreements
- ◆ University Transfer Programs/Agreements
- ◆ Academic Career Education Programs,  
Certificates and Associate Degrees
- ◆ Health Program Procedures
- ◆ Academic Career Education Program Guides
- ◆ Non-Degree Programs and Activities

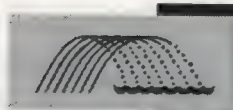




# Transfer Programs

Program Title	Associate in Arts Degree (CODE)	Associate in Science Degree (CODE)
Agriculture		AS.40174
Architecture, Pre		AS.40873
Art Majors	AA.40382	
Aviation, Pre		AS.40797
Biology Majors		AS.40422
Biotechnology, Pre		AS.40423
Business Administration	AA.40180	
Chemical Technology		AS.40464
Chemistry Majors		AS.40462
Computer Science & Information Technology	AA.40144	
Computer Science	AA.40410	AS.40410
Conservation		AS.40424
Dentistry, Pre		AS.40516
Dietetics, Pre	AA.40582	AS.40582
Drama	AA.40385	
Education, Art	AA.40342	
Education, Business	AA.40346	
Education, Elementary	AA.40350	
Education, Industrial Arts	AA.40358	
Education, Music	AA.40362	
Education, Physical	AA.40363	
Education, Pre-School	AA.40364	
Education, Secondary	AA.40366	AS.40366
Education, Special	AA.40368	
Engineering, Pre		AS.40816
English	AA.40318	
Environmental Science, Pre		AS.40465
Foreign Language Majors	AA.40920	
Forestry		AS.40426
Geography	AA.40484	AS.40484
Geology	AA.40472	AS.40472
Home Economics	AA.40354	AS.40354
International Studies	AA.40492	
Journalism	AA.40323	
Law, Pre	AA.40729	AS.40729
Liberal Arts	AA.40390	AS.40390
Mathematics		AS.40414
Medical Technology, Pre		AS.40538
Medicine, Pre		AS.40532
Mortuary Science, Pre		AS.40430
Music Majors	AA.40394	
Natural Resources		AS.40428
Nursing, Pre (BSN)	AA.40561	AS.40561
Occupational Therapy, Pre	AA.40572	AS.40572
Optometry, Pre		AS.40540
Osteopathy, Pre		AS.40542
Pharmacy, Pre		AS.40586
Physical Therapy, Pre		AS.40576
Psychology	AA.40490	
Social Work		AA.40774
Sociology	AA.40496	
Speech	AA.40326	
Theater	AA.40398	
Veterinary Medicine, Pre		AS.40432





# Transfer Programs

## Transfer Mission Statement

To facilitate a seamless transition of students and course credits toward degree completion, Delta College is committed to providing academic programs, support services and formal articulation processes for students transferring to or from other accredited institutions.

Delta College is an excellent choice for students planning to earn an Associate degree. While enrolled at Delta in a transfer degree program, you will enjoy these benefits:

- A Campus that is convenient to your home and job.
- Costs that are well below four-year colleges and universities.
- Classes that are small and interactive.
- Faculty who are sincerely concerned about your success and available to provide individual assistance.
- Personal student services and academic advising that will support your career decision-making and educational needs.
- Transfer courses that are recognized by respected colleges and universities throughout the United States.
- Time to establish firm career goals and adjust to college-level studies.
- Opportunity to refine your academic abilities and improve reading, composition, mathematics and study skills.

Be assured that Delta's Associate in Arts and Associate in Science Degree Programs provide you with a solid academic foundation required for success at your chosen four-year college or university.

Basically, Delta College provides the first half (freshman and sophomore years) of most Baccalaureate degree programs. After completing your Associate in Arts or Associate in Science Degree at Delta College, you will in most cases be qualified to transfer to complete the second half (junior and senior years) of the Baccalaureate degree if you have planned carefully, followed the academic advising provided by Delta counselors/advisors, and successfully completed the required courses at the minimum grade level stated by the four-year college or university. It is particularly important for you, as a transfer student, to choose your four-year school in your freshman year because the preparation needed at Delta College to enter one transfer college may be different from the preparation and admission requirements at another school. Professional counselors are available at Delta College to assist you in choosing your college or university and in planning your transfer program to fit that school.

Detailed program guidesheets, listing suggested Delta courses and providing career information and admission specifics, are available from the Counseling Center. Other transfer programs can be individually developed with a Delta counselor. Also, with the addition of some courses, almost any Delta College Career Education Associate in Business Studies Degree, Associate in Applied Science Degree, or Associate in Applied Arts Degree may be utilized in part toward fulfilling a portion of a Baccalaureate degree. Transferability of these career education programs and courses depends primarily upon the major area of study in the Baccalaureate degree and the senior college of choice.

## MACRAO Articulation Agreement with Senior Colleges

The Michigan Association of Collegiate Registrars and Admissions Officers (MACRAO) Articulation Agreement was established to improve transfer student articulation between two-year and four-year colleges and universities in Michigan. Delta College is a participant in this MACRAO Agreement with the following four-year institutions:

- |                                 |                                     |
|---------------------------------|-------------------------------------|
| * Adrian College                | * Kalamazoo College                 |
| * Albion College                | * Lake Superior State University    |
| * Alma College                  | * Lawrence Technological University |
| * Aquinas College               | * Madonna College                   |
| * Baker College                 | * Michigan State University         |
| * Calvin College                | * Michigan Technological University |
| * Central Michigan University   | * Northern Michigan University      |
| * Cleary College                | * Northwood University              |
| * Detroit College of Business   | * Oakland University                |
| * Eastern Michigan University   | * Olivet College                    |
| * Ferris State University       | * Saginaw Valley State University   |
| * Kettering University (GMI)    | * Siena Heights College             |
| * Grand Valley State University | * Spring Arbor College              |
| * Hope College                  | * Western Michigan University       |

\* Indicates four-year colleges and universities which have attached provisions to their Agreements. Usually these can be satisfied after transferring. These provisions can be obtained from the four-year institution.

This Agreement provides that if you complete either the Associate in Arts Degree or the Associate in Science Degree, or all of the following requirements at Delta College and are accepted as a transfer student by one of the above schools, you will have satisfied the basic general education requirements of that school. The MACRAO Articulation Agreement does not guarantee admission into a particular college or into any particular program at that college. This Agreement applies to basic studies/general education and does not exempt the transferring student from meeting specific requirements for a particular program or program of study; i.e., education, engineering, business, social work. **Acceptable courses are specified under the Associate in Arts and Associate in Science Degree Requirements on page 97.** The specific requirements of the MACRAO Agreement are:

- |  |                    |
|--|--------------------|
| 1. English Composition   | 6 Semester Credits |
| 2. Humanities<br>(in at least two subject areas)   | 8 Semester Credits |
| 3. Social Sciences<br>(in at least two subject areas)  | 8 Semester Credits |
| 4. Natural Sciences<br>(in at least two subject areas; must include at least one lab course) | 8 Semester Credits |

Transcripts of Associate in Arts or Associate in Science Degree graduates will automatically indicate that MACRAO Agreement requirements were fulfilled. Non-graduates must request the Records and Registration Office to have the MACRAO Agreement put on their official transcripts if requirements were fulfilled.



## Transferability of Delta Courses

Based upon information provided to Delta College from the major public Michigan four-year universities and Northwood University, Delta's counseling staff has developed a composite listing that provides specific course equivalency information about how Delta College courses will transfer. The transferability of courses between colleges depends basically upon:

1. The school into which you transfer.
2. Your program of study (program, or more specifically, the major and/or major and minors you are seeking).
3. The grade you receive in the course. In general, a C or better is necessary; a B in "major" courses.
4. Whether or not the transfer college has an equivalent (same) course and if so, the number of credits acceptable for their course.
5. The level of the course. For example, an intermediate algebra course may be acceptable for one program, but not for others that require higher levels of mathematics.

Delta College has liaison relationships with many four-year colleges and universities regarding their transfer requirements and program recommendations; however, if you wish to transfer credits from Delta to another school, it is **your** responsibility to be aware of that institution's transfer policies and program requirements.

There is a limit to the number of credits you may transfer into a four-year college or university. Generally, this is 62 credits or half the total number of credits required for the Baccalaureate degree.

You can review in the Counseling Center a printed copy of how your Delta courses should be accepted at the college into which you are transferring. Michigan universities for which transfer course information is available are: Central Michigan University, Eastern Michigan University, Ferris State University, Grand Valley State University, Lake Superior State University, Michigan State University, Michigan Technological University, Northern Michigan University, Northwood University, Oakland University, Saginaw Valley State University, University of Michigan-Ann Arbor, University of Michigan-Flint, and Western Michigan University. In addition, check out this information on Delta's homepage at <http://www.delta.edu/tguides>.

You should maintain close contact with your counselor for all possible assistance in registering for the proper courses and maintaining the necessary level of academic performance. While Delta College will make every effort to give proper guidance, you are responsible for your own choices and for developing your own educational plan.



## Transfer Procedures

### Evaluating Colleges

Transferring from one college to another is very common, but to make it a positive experience, you are encouraged to investigate four-year colleges and universities and their degree requirements; plan ahead; and work closely with your Delta College counselor, especially in selecting the correct courses for your transfer program. Discussed below are several important things to think about as you start evaluating various colleges and universities. You may investigate colleges at <http://www.collegenet.com> on the Internet.

The **academic climate** of the institution should definitely be explored. Compare your background and abilities with those of the present students at that particular college or university. The transfer institution's admissions staff and your Delta counselor can be very helpful in this regard. They are aware of the institution's selection criteria and how well previous Delta graduates have done. You should read carefully each institution's statement on admissions requirements to be certain you can meet them.

The **program offerings** of the various institutions need to be considered in your decision-making process. If you are interested in a specific field of study, you should look first at colleges and universities offering recognized and accredited programs in that area. Not all schools offer the same programs of study.

There are **non-academic factors** to consider also in making your college or university choice. How large is the student body? Is campus housing available? What is the nature of the community in which the school is located and how far is it from home? Does the institution provide the environment and opportunity for the types of extracurricular activities that you enjoy (e.g., sports, arts, student government)? Where and what types of jobs are their graduates getting and what type of placement services do they provide? Be sure to get answers to questions like these through visits to the campus, by looking at the catalog, on the school's homepage on the internet, or by talking to

current students at the school. This information can help you choose an institution that fits your personal interests.

Your investigation should also include a thorough review of the **cost** of the college or university being considered. Usually the basic educational expenses of the institutions for an academic year can be determined from their current catalog. Then add on amounts for such items as personal expenses and room and board to come to a total that will realistically reflect your overall costs.

Last, but certainly not least, are the respective **application procedures for admission and financial aid**. You must submit all required admissions forms correctly and on time if you expect full consideration. You must also submit all financial aid forms correctly and on time. The schools often make their decisions about admission and financial aid soon after the deadline. They must decide on the basis of the material that they have in hand, so it is to your advantage to be prompt and accurate. All Michigan four-year institutions charge an admissions application fee and all have specific deadline dates by which your application and other necessary credentials (required test scores, high school and college transcripts) must be received.

### Scholarship Students Experience



"Delta College has given me so much that I find it flattering I was selected out of all of the qualified candidates. As a student in the Dental Hygiene Program, I am enthused of what adventures lay ahead ... and am proud that I can experience the 'Delta Difference'."

*Michael A. Nowak*



## Transfer Degree Requirements

Each institution of higher education has its own requirements for admission, majors, general education, and so on. These requirements are stated in the college's official catalog or bulletin. Usually credits are defined as semester hours but some colleges and universities use the term or quarter hour system. To earn a Bachelor's degree, you will generally be required to fulfill the following:

- **General Education requirements.** Minimum number of credits earned in each of certain broad groups of courses, such as the humanities, the social sciences, the physical or natural sciences, and mathematics. Some institutions refer to these as distribution or core requirements.
- **Level requirements.** Minimum number of credits earned in courses on such levels as introductory, intermediate, and advanced, or in specific numbered levels of courses such as 300 and 400, commonly referred to as junior and senior-level courses.
- **Major or concentration requirements.** Minimum number of credits earned in a subject area of specialization (i.e., English, chemistry, business administration) for the degree. About one-fourth of the total number of credits required for a degree must be in the major or field of concentration.
- **Minor requirements.** Minimum number of credits earned in a second subject of concentration/specialization. Generally the number of credits required is about half to two-thirds required for a major. Not all degrees require you to declare a minor.
- **Residence requirements.** Minimum number of credits earned in attendance at the institution which is granting the degree (as opposed to transfer credits earned at another school). This is not to be confused with residency which refers to where one lives.
- **Elective requirements.** Minimum number of credits earned in optional courses that the student chooses.
- **Grade requirements.** Minimum cumulative grade point average of grades earned in all courses taken and often, in all courses taken in the major and/or minor. Some colleges and universities also require a minimum grade in specific courses.
- **Specific subject requirements.** Examples include: freshman-level English composition; two or more courses in physical education; two years of foreign language courses or a minimum level of proficiency in a foreign language as demonstrated on a specified examination; and computer literacy.

## Transfer Procedures Checklist

It is important that you select, as early as possible, the institution to which you plan to transfer because schools differ markedly as to curricula offered and their corresponding requirements. If you plan to attend another college or university after the completion of your sophomore year at Delta College, you should:

- **Credit requirements.** Minimum number of credits, typically 124 to 130 semester credits for a Bachelor's degree.
- Seek academic advising from a Delta counselor so you will enroll in courses that best fit your needs, achievement level, program, and transfer institution requirements.
- Obtain a transfer college/university guidesheet and a program guidesheet from Delta's Counseling Center. Together, these two guidesheets will provide most of the basic information you will need to make the best decisions about both your career choice and transfer school.
- Check out the college or university's homepage on the internet. To see if they have one check <http://www.collegenet.com> and search that website.
- Visit transfer school campuses and make a list of questions in advance to use when you visit their Admissions Offices or other departments. Schedule appointments in advance if you would like a campus tour, want to visit a residence hall, or want to talk with specific personnel.
- Apply for transfer admission well in advance (almost a year) of the anticipated date of transfer. Admission application forms for most Michigan public and some Michigan private senior institutions are available in Delta's Counseling Center.
- Review the official catalog of your transfer college/university of choice. Current Michigan catalogs of many institutions are available for use in the Delta Career and Employment Services Office.
- If you served in the military, obtain and send an official copy of your record (DD214 form).
- Confer with transfer institutions admissions personnel who visit Delta annually (some twice a year). Times, dates, and places are posted in the glass case near the Counseling Center entrance and announcements regarding these visits are printed in the weekly Bulletin.
- Request that each college or university you have attended send an official transcript of your courses and grades. Schools usually charge a small fee and you must request these transcripts yourself, in person or in writing, since your signature must be provided. Transcripts will only be acceptable if they are mailed directly by the school and if they have the official seal/signature. Delta transcripts are requested from the Records and Registration Office.
- If required, copies of appropriate test scores (usually ACT or SAT scores) and your high school transcript should be sent. Usually this is only required if you have completed less than 24 to 30 transferable credits. This information is usually detailed in the transfer admission application directions.
- Complete the appropriate financial aid application materials early if you plan to apply for grants, loans, or scholarships. You must also request that each previous institution attended mail a financial aid transcript regardless of whether or not you ever applied for financial aid from that school. These financial aid transcripts are **not** the same as your academic transcript which contains courses and grades. They are requested from financial aid offices and there is no charge.





# Career Education Articulations/Transfer Agreements

The following Delta College Career Education programs are fully articulated with baccalaureate programs at many colleges and universities. Therefore, Delta College graduates will be accorded full junior standing at those colleges and universities. See our web page for more information: <http://www.delta.edu/artic>

Delta College Program (Code)	University - Program (Degree)
Accounting (ABS.10172)	<b>Davenport University</b> - Business Administration (BS) <b>Ferris State University</b> - Accounting (BS) <b>Northwood University</b> - Accounting (BBA) *FU, GSU, OU, RC, SAC, SLU, SVSU, UM-F
Architectural Technology (AAS.15872)	<b>Ferris State University</b> - Construction Management (BS) - Facilities Management (BS) <b>Franklin University</b> - Technical Administration (BS) *FU, GSU, OU, RC, NU, SAC, SLU, SVSU, UM-F
Automotive Service Technology (AAS.15844)	<b>Ferris State University</b> - Automotive and Heavy Equipment Management (BS) - Education (BS) <b>Franklin University</b> - Technical Administration (BS) *FU, GSU, OU, NU, RC, SAC, SLU, UM-F
Aviation Flight Technology (AAS.25795)	<b>Ferris State University</b> - Education (BS) *FU, GSU, OU, NU, RC, SAC, SLU, UM-F
Chemical Processing Technology	<b>Central Michigan University</b> - Chemical Engineering Technology (BS) *FU, GSU, OU, NU, RC, SAC, SLU, UM-F
Chemical Technology (AAS.15464)	<b>Saginaw Valley State University</b> - Chemistry (BS) *FU, GSU, OU, NU, RC, SAC, UM-F, JIU
Child Development (AAA.25762)	<b>Ferris State University</b> - Education (BS) <b>Franklin University</b> - Health Service Administration (BS) *FU, GSU, OU, NU, RC, SAC, SVSU, UM-F
Computer Science & Information Technology (Accounting - ABS.10133) (Application Specialist - ABS.10135) (Programming - ABS.10137)	<b>Davenport University</b> - Business Administration (BS) <b>Ferris State University</b> - Computer Information Systems (BS) <b>Northwood University</b> - Computer Science/Management (BBA) <b>Saginaw Valley State University</b> - Computer Information Systems (BS) (Only Programming) <b>Saint Leo University</b> - Computer Information Systems (BS) *FU, GSU, OU, RC, SAC, SVSU, UM-F
Computer Marketing (ABS.10140)	*FU, GSU, OU, NU, SAC, UM-F
Computer Numerical Control Technology (AAS.15862)	<b>Ferris State University</b> - Manufacturing Engineering Tech. (BS) <b>Franklin University</b> - Technical Administration (BS) *FU, GSU, OU, NU, RC, SAC, UM-F
Construction Management (AAS.15875)	<b>Ferris State University</b> - Construction Management (BS) <b>Franklin University</b> - Technical Administration (BS) *FU, GSU, OU, NU, RC, SAC, UM-F
Criminal Justice (Basic Police Training - AAA.25725) (Corrections - AAA.25726) (Law Enforcement - AAA.25727)	<b>Concordia College</b> - Criminal Justice (BA) <b>Ferris State University</b> - Education (BS) <b>Saginaw Valley State University</b> - Criminal Justice (BA) (only Law Enforcement) *FU, GSU, OU, NU, RC, SAC, UM-F
Dental Assisting (AAS.20510)	<b>Ferris State University</b> - Education (BS) <b>Franklin University</b> - Health Service Administration (BS) *FU, GSU, OU, NU, RC, SAC, SVSU, UM-F
Dental Hygiene (AAS.20515)	<b>Ferris State University</b> - Education (BS) <b>Franklin University</b> - Health Service Administration (BS) *FU, GSU, OU, NU, RC, SAC, SVSU, UM-F
Electronic Media/BRT (AAS.15340)	*FU, GSU, OU, NU, RC, SAC, SVSU, UM-F
Electronic Media/Graphic Design (AAA.15341)	<b>Ferris State University</b> - Education (BS) *FU, GSU, OU, NU, SAC, SVSU, UM-F

**\*Note: See page 24 for more information about articulation with these colleges/universities:**

FU - Franklin University (BS)	RC - Rochester College (BA) (BS)
GSU - Governors State University (BOGBA)	SAC - Spring Arbor College (BA)
JIU - Jones International University (BA)	SLU - Saint Leo University (BA) (BS)
NU - Northwood University (BBA)	SVSU - Saginaw Valley State University (BAS)
OU - Oakland University (BGS)	UM-F - University of Michigan - Flint (BAS)



<b>Delta College Program (Code)</b>	<b>University - Program (Degree)</b>
Environmental Technology (AAS.15466)	<b>Ferris State University</b> - Industrial & Environmental Health Management (BS) - Education (BS) *FU, GSU, OU, NU, RC, SAC, UM-F
Fire Science (AAS.25731-25736)	<b>Northwood University</b> - Management/Fire Science (BBA) *FU, GSU, OU, SAC, UM-F
Health Fitness Education & Promotion (AAS.25710)	<b>Central Michigan University</b> (pending) <b>Northwood University</b> (pending) *FU, GSU, OU, RC, SAC, UM-F
Industrial Technology Education (AAS.15710)	<b>Saginaw Valley State University</b> (pending)
Interior Design (ABS.10216)	*FU, GSU, OU, NU, SAC, SVSU, UM-F
Legal Support Professional (ABS.10282)	<b>Eastern Michigan University</b> - Legal Assistant *FU, GSU, OU, NU, SAC, SVSU, UM-F
Management (ABS.10254 - General) (ABS.10262 - Small Business) (ABS.10260 - Retail) (ABS.10256 - Marketing) (ABS.10257 - Merchandising)	<b>Davenport University</b> - Business Administration (BS) <b>Ferris State University</b> - Business Administration (BS) - Retailing (BS) - Marketing (BS) <b>Northwood University</b> - Management (BBA) - Marketing & Management-dual major (BBA) - Fashion Marketing/Management - dual major (BBA) *FU, GSU, OU, NU, SAC, SVSU, UM-F
Manufacturing Technology (AAS.15851)	*NU, SAC, SVSU, UM-F
Mechanical Engineering Technology (AAS.15822)	<b>Central Michigan University</b> - Mechanical Engineering Technology (BS) <b>Ferris State University</b> - Manufacturing Engineering Tech (BS) - Product Design Engineering Tech (BS) <b>Franklin University</b> - Technical Administration (BS) <b>Lake Superior State University</b> (pending) <b>Wayne State University</b> - Electromechanical Engineering Tech (BSET) *FU, GSU, OU, NU, SAC, SVSU, UM-F
Medical Office Professions/ Medical Secretary (ABS.10288)	<b>Ferris State University</b> - Education (BS) - Health Care Systems Administration (BS) <b>Franklin University</b> - Health Service Administration (BS) *FU, GSU, OU, NU, SAC, SVSU, UM-F
Nursing (AAS.20564)	<b>Davenport University</b> - Nursing (BSN) <b>Ferris State University</b> - Nursing (BSN) - Education (BS) <b>Franklin University</b> - Health Service Administration (BS) <b>Saginaw Valley State University</b> - Nursing (BSN) *FU, GSU, OU, NU, SAC, UM-F (BSN)
Office Professions (Administrative Assistant - ABS.10296)	*FU, GSU, OU, NU, SAC, SVSU, UM-F
Paramedic (AAS.20585)	<b>Franklin University</b> - Health Service Administration (BS) *FU, GSU, OU, NU, SAC, UM-F
Physical Therapist Assistant (AAS.20573)	<b>Ferris State University</b> - Health Care Systems Admin (BS) - Education (BS) <b>Franklin University</b> - Health Service Administration (BS) *FU, GSU, OU, NU, SAC, SVSU, UM-F
Radiography (AAS.20545)	<b>Ferris State University</b> - Health Care Systems Admin (BS) - Education (BS) <b>Franklin University</b> - Health Service Administration (BS) *FU, GSU, OU, NU, SAC, SVSU, UM-F

**\*Note: See page 24 for more information about articulation with these colleges/universities:**

FU - Franklin University (BS)

GSU - Governors State University (BOGBA)

JIU - Jones International University (BA)

NU - Northwood University (BBA)

OU - Oakland University (BGS)

RC - Rochester College (BA) (BS)

SAC - Spring Arbor College (BA)

SLU - Saint Leo University (BA) (BS)

SVSU - Saginaw Valley State University (BAS)

UM-F - University of Michigan - Flint (BAS)

Delta College Program (Code)	University - Program (Degree)
Residential Construction (AAS.15887)	<b>Ferris State University</b> - Education (BS) <b>Franklin University</b> - Technical Administration (BS) *FU, GSU, OU, NU, SAC, UM-F
Respiratory Care (AAS.20579)	<b>Ferris State University</b> - Education (BS) <b>Franklin University</b> - Health Service Administration (BS) *FU, GSU, OU, NU, SAC, SVSU, UM-F
Skilled Trades (AAS.60891)	<b>Franklin University</b> - Technical Administration (BS) *FU, GSU, OU, NU, SAC, UM-F
Surgical Technology (AAS.20549)	<b>Ferris State University</b> - Education (BS) <b>Franklin University</b> - Health Service Administration (BS) *FU, GSU, OU, NU, SAC, SVSU, UM-F
Water Environment Technology (AAS.15827)	<b>Ferris State University</b> - Education (BS) - Industrial Environment (BS) - Hazardous Waste Management (BS) - Health Management (BS) <b>Franklin University</b> - Technical Administration (BS) *FU, GSU, OU, NU, SAC, SVSU, UM-F
Welding Engineering Technology (AAS.60897)	<b>Ferris State University</b> - Education (BS) - Manufacturing Engineering Technology (BS) - Welding Engineering <b>Franklin University</b> - Technical Administration (BS) *FU, GSU, OU, NU, SAC, UM-F
<p><b>*Note: See below for more information about articulation with these colleges/universities:</b></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>FU - Franklin University (BS) (Distance Learning)</p> <p>GSU - Governors State University (BOGBA) (Distance Learning)</p> <p>JIU - Jones International University (BA) (Distance Learning)</p> <p>NU - Northwood University (BBA)</p> <p>OU - Oakland University (BGS)</p> </div> <div style="width: 48%;"> <p>RC - Rochester College (BA) (BS)</p> <p>SAC - Spring Arbor College (BA)</p> <p>SLU - Saint Leo University (BA) (BS) (Distance Learning)</p> <p>SVSU - Saginaw Valley State University (BA Applied Studies)</p> <p>UM-F - University of Michigan - Flint (BA Applied Science)</p> </div> </div>	

**(FU) Franklin University** - A Delta College Associate degree plus 20-24 credits from a recommended list may be transferred. Majors are available in Business Administration, Computer Science, Technical Administration, Health Service Administration, and Management Information Systems. FU courses may be taken at home through distance learning. Eighteen minors are also available. <http://www.alliance.franklin.edu>

**(GSU) Governors State University** - A senior-level university offers Delta College students a Board of Governors Bachelor of Arts Degree. Adult learners have the freedom to design their own degree program and take courses that fit their career goals and personal interests. Students may transfer up to 80 credit hours from Delta. To complete the bachelor's degree, a minimum of 40 upper-division semester hours must be taken from any four-year university, and 15 semester credit hours must be completed from GSU and may be distance learning courses. <http://www.govst.edu.bog>

**(JIU) Jones International University** - Bachelor of Arts in Business Communications (only upper level) for all AA and AS Degrees. <http://jonesinternational.edu>

**(OU) Oakland University** - The two+two program provides for transfer of up to 62 credits. Students with an associate's degree in any area except nursing may qualify for a Bachelor of General Studies Degree at Oakland University.

**(NU) Northwood University** - This university will accept any associate's degree from Delta College and apply the credits to either a two + two or three + one program for a Bachelor of Business Administration with a major in management.

**(RC) Rochester College** - A Delta College graduate may transfer up to 92 credits into a Bachelor of Business Administration in Management and Bachelor of Science in Behavioral Science from occupational concentrations. Rochester College requires 128 credits. In most cases Delta students transferring up to 92 hours may complete their baccalaureate degree in one year. Rochester College offers a non-traditional degree completion program for the B.B.A. for working adults.

**(SLU) Saint Leo University** - A Delta College graduate may transfer up to 66 credits including general education toward a Bachelor of Arts in Accounting or Business Administration or a Bachelor of Science in Computer Information Systems. All courses can be taken at home. <http://video.saintleo.edu>

**(SVSU) Saginaw Valley State University** - Specific technical associate degree programs at Delta College will transfer and apply to a Bachelor of Applied Studies degree. Additional basics and a minor are required to complete the bachelor's degree.

**(SAC) Spring Arbor College** - A maximum of 84 credit hours may be transferred from Delta College and applied toward a Bachelor of Arts degree. Three majors are available: Family Life Education, Management and Health Services, and Management of Organizational Development. Classes are offered in the tri-county area for the Management and Organizational Development program and can be completed in 14 months by taking evening classes.

**(UM-F) University of Michigan - Flint** - Technical associate degree programs at Delta College will transfer to the University of Michigan - Flint and will apply toward a Bachelor of Applied Science degree program.





# University Transfer Programs / Agreements

Transfer programs of study are designed to have students earn at least 62 credits at Delta College and then transfer to a four-year college or university. Program of study guide sheets that outline the required or recommended courses are available in the Delta College Counseling Center. If you complete either the Associate in Arts Degree or the Associate in Science Degree, you will have completed the MACRAO requirements for transferability to most universities. Additional transfer program information is available on our web site at <http://www.delta.edu/artic>. The universities below have signed an articulation agreement with Delta College to guarantee a smooth transition.

Delta College Program (Code)	University - Program (Degree)
Art (AA.40382)	Central Michigan University (BFA)
Biotechnology, Pre (AS.40423)	Ferris State University - Biotechnology (BS)
Business Administration (AA.40180)	Central Michigan University - All Business Majors (BBA) Ferris State University - All Business Majors (BBA) Franklin University - All Business Majors (BS) Kettering University (GMI) - Management (BS) Northwood University - All Business Majors (BBA) Oakland University - All Business Majors (BBA) Rochester College - Management (BBA) Saginaw Valley State University - All Business Majors (BBA) Saint Leo University - All Business Majors (BA) (BS)
Chemistry (AS.40462)	Ferris State University - Education (BS) Kettering University (GMI) - Chemistry (BS)
Liberal Arts (Chemistry Engineering Technology) (AA.40390) (AS.40390)	Central Michigan University (BS) Ferris State University - Education (BS)
Computer Science (AA.40410) (AS.40410)	Franklin University - Computer Science (BS) Management Information Systems (BS) Saginaw Valley State University - Computer Science (BS) Saint Leo University - Computer Information Systems (BS)
Elementary Education (AA.40350)	Central Michigan University - Elementary Education (BS) Oakland University - Elementary Education (BS) Saginaw Valley State University - Elementary Education (BA)
Journalism (AA.40323)	Central Michigan University - Journalism (BA)
Medical Technology, Pre (AS.40538)	Ferris State University - Education (BS)
Liberal Arts (Meteorology) (AA.40390) (AS.40390)	Central Michigan University - Meteorology (BS)
Secondary Education (AA.40366) (AS.40366)	Central Michigan University - Secondary Education (BS) Oakland University - Secondary Education (BS) Saginaw Valley State University - Secondary Education (BA)
Engineering, Pre (AS.40816)	Ferris State University - Survey Engineering (BS) Kettering University (GMI) - Electrical, Computer, Industrial, Manufacturing Systems, Mechanical, Management and Chemistry (BS) Oakland University - Engineering (BS) Saginaw Valley State University - Electrical Engineering (BS) - Mechanical Engineering (BS)
Optometry, Pre (AS.40540)	Ferris State University - Optometry (OD)
Pharmacy, Pre (AS.40586)	Ferris State University - Pharmacy (BS)
Liberal Arts (Physics) (AA.40390) (AS.40390)	Central Michigan University - Physics (BS)
Liberal Arts (Physics/Chemistry) (AA.40390) (AS.40390)	Oakland University - Health & Safety (BS)
Liberal Arts (Political Science/Econ) (AS.40390) (AS.40390)	University of Michigan - Flint - Masters in Public Administration (MPA)
Mathematics Education (AS.40414)	Ferris State University - Education (BS)





# Academic Career Education Programs

	ABS	AAS	AAA	AAS & ABS	Certificate	Page
Accounting	ABS.10172				CSA.35740 Adv	29
Aerobic Instructor		AAS.15872			CTZ.35831 Ach	30
Architectural Technology		AAS.60842				31
Automotive Service Educational Program (GM)		AAS.15844			CTA.35845 Adv	32
Automotive Service Technology		AAS.25795			CSA.35796 Adv	33
Aviation Flight Technology					CHZ.35520 Ach	34
Central Service Processing & Distribution Technology		AAS.15829			CSA.35835 Adv	34
Chemical Process Technology		AAS.15464				35
Chemical Technology			AAA.25762		CSA.35763 Adv	36
Child Development					CTA.35865 Adv	37
Computer Aided Drafting		AAS.15862			CTA.35863 Adv	38
Computer Numerical Control Technology						
Computer Science & Information Technology:						39
Accounting	ABS.10133				CBA.35136 Adv	39
Computer Application Specialist	ABS.10135					39
Programming	ABS.10137					40
Construction Management		AAS.15875				
Criminal Justice:						
Basic Police Training Certification Track			AAA.25725			41
Corrections			AAA.25726		CSZ.35724 Ach	41
Law Enforcement			AAA.25727			41
Dental Assisting		AAS.20510			CHA.35512 Adv	42
Dental Assisting CDA/RDA Transition Track					CHA.35513 Adv	43
Dental Hygiene		AAS.20515				44
Dual Degrees (Business & Health or Technology):				DE.30844		45
Automotive Service Technology				DE.30518		45
Dental Assisting/General Management				DE.30519		45
Dental Hygiene/General Management				DE.30585		45
Health Care Services/Paramedic				DE.30569		45
Nursing/General Management				DE.30575		45
Physical Therapist Asst/General Management				DE.30546		45
Radiography/General Management				DE.30578		45
Respiratory Care/General Management				DE.30550		45
Surgical Technology/General Management		AAS.15340				46
Electronic Media/BRT			AAA.15341			47
Electronic Media/Graphic Design					CHZ.35583 Ach	47
Emergency Medical Technician (Basic)		AAS.15466			CSA.35467 Adv	48
Environmental Technology						
Fire Science:		AAS.25736				49
Fire Fighter Technician		AAS.25734				49
Fire Investigation/Prevention		AAS.25731				49
Fire Science Technology		AAS.25732				49
EMS		AAS.25733				49
Industrial/Commercial Security & Safety		AAS.25735				49
Leadership & Training		AAS.25710				51
Health Fitness Education & Promotion					CTZ.35879 Ach	51
Industrial Supervision		AAS.15710				52
Industrial Technology Education						52
Interior Design	ABS.10216				CSA.35493 Adv	53
International Studies					CTZ.35851 Ach	54
Lean Manufacturing					CBA.35283 Adv	55
Legal Support Professional	ABS.10282				CTA.35881 Adv	56
Machine Tool CNC Operator					CTA.35882 Adv	56
Machine Tool Grinding Specialist					CTA.35883 Adv	57
Machine Tool Lathe Specialist					CTA.35884 Adv	57
Machine Tool Milling Specialist						
Machine Tool Operations:		AAS.15884				58
Lathe & Grinding Speciality		AAS.15886				58
Lathe & Milling Speciality		AAS.15885				58
Milling & Grinding Speciality						
Management:						59
Cosmetology Management	ABS.10251					59
General Management	ABS.10254					59
Marketing Management	ABS.10256					59
Merchandising Management	ABS.10257					59
Office Services Management	ABS.10258					59
Retail Management	ABS.10260				CBA.35263 Adv	59
Small Business Management	ABS.10262					59

Key: ABS - Associate in Business Studies    AAS - Associate in Applied Science    AAA - Associate in Applied Arts    AAS & ABS - Dual Degree  
 Adv - Advanced Certificate    Ach - Certificate of Achievement    Post - Post Associate Certificate    Cmp - Certificate of Completion



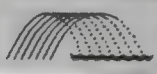


# Academic Career Education Programs

	ABS	AAS	AAA	AAS & ABS	Certificate	Page
Management (Canadian National Railway)					CBA.35220 Adv	60
Management/Subsequent Degrees						
Business Management	ABS.10255					61
Northwood 3 + 1	ABS.85005					61
Manufacturing Technology		AAS.15851				61
Massage Therapy					CHP.35588 Post	62
Mechanical Design Automation					GTP.35886 Post	63
Mechanical Engineering Technology		AAS.15822				63
Medical Office Professions:						
Health Insurance Coding & Claims Specialist					CBA.35286 Adv	64
Medical Secretary	ABS.10288					64
Medical Transcription Specialist					CBA.35285 Adv	64
Nursing (RN)		AAS.20564				65
Nursing Transition Track:						
Licensed Practical Nurse to RN		AAS.20568				66
Licensed Paramedic to RN		AAS.20569				66
Office Professions:						
Administrative Assistant	ABS.10296					68
Office Assistant					CBA.35291 Adv	68
Office Specialist					CBA.35292 Adv	68
Office Skills Core					CBZ.35293 Ach	68
Paramedic		AAS.20585				69
Personal Trainer					CSA.35742 Adv	69
Physical Therapist Assistant		AAS.20573				70
Practical Nurse (PN)					CHA.35563 Adv	71
Quality Assurance					CTZ.35877 Ach	72
Quality Management					CTZ.35878 Ach	72
Radiography		AAS.20545				73
Refrigeration/Heating/Air Conditioning Technology					CTA.35888 Adv	74
Residential Construction		AAS.15887			CTA.35889 Adv	75
Respiratory Care		AAS.20579				76
Skilled Trades		AAS.60891				77
Sonography, Diagnostic Medical		AAS.20547			CHA.35545 Adv	80
Surgical First Assistant		AAS.20555			CHA.35555 Adv	81
Surgical Technology		AAS.20549			CHA.35547 Adv	82
Water Environmental Technology		AAS.15827			CTA.35827 Adv	83
Web Master					CBA.35124 Adv	83
Welding Engineering Technology		AAS.60897				84
Welding Technology					CTA.35899 Adv	84

Many courses in these Programs have prerequisites. See Section VI. Course Descriptions for prerequisite information.

Key: ABS - Associate in Business Studies    AAS - Associate in Applied Science    AAA - Associate in Applied Arts    AAS & ABS - Dual Degree  
Adv - Advanced Certificate    Ach - Certificate of Achievement    Post - Post Associate Certificate    Cmp - Certificate of Completion



## Academic Career Education Programs Certificates and Associate Degrees

### Career Education Programs' Mission Statement:

Delta College's Career Education Programs provide core knowledge, skills, and learning experiences that prepare students for successful entry and advancement in careers, baccalaureate institutions, and global opportunities.

Many educational programs offered at Delta College are designed to prepare you for immediate employment in the job market. The career education curricula provides you with the necessary skills and knowledge required for entry-level positions in career fields. In addition, most programs are diversified sufficiently to create some social and economic awareness. Attending full-time, you can complete most Certificate programs in one year and the majority of Associate degree programs in two years.

Most career education programs are not specifically designed for transfer purposes to Baccalaureate degree-granting institutions. Transfer of all credits earned should not be expected.

In some programs, credits earned in career education programs may be transferable into a Baccalaureate degree program at a four-year college or university; however, these programs are not designed specifically to parallel the first two years of university study. You should consult with your Delta counselor and the Admissions Office of the college or university into which you wish to transfer.

### Terms Used in this Section

**Certificate Option:** A Certificate is awarded for the completion of various career education/technical curricula. Most Certificates prepare you for specific jobs or aspects of a job. Some Certificates are part of an Associate degree program, in which case the credit earned in the Certificate may be used toward the Associate degree. Delta College awards the following certificates:

**Certificate of Completion** - programs of less than six (6) credits

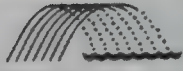
**Certificate of Achievement** - programs of six (6) to 23 credits

**Advanced Certificate** - programs of 24 or higher credit hours

**Post Associate Certificate** - beyond associate's level with six (6) or higher credits.

**Applied Associate Degree:** The degree is broader in scope than the Certificate and includes a varying number of General Education and support courses.

**Electives:** These are courses applicable toward a degree or Certificate which may be chosen to meet your individual interests and needs.



# Health Program Procedures

## Clinical Application and Validation

1. Complete **all** prerequisite courses as specified in this catalog. This means transfer credit, waivers, and incomplete course work ("I" grades) must be posted on your transcript **prior to** application for validation.
2. Obtain from Records and Registration or Counseling the Validation Application for Health Clinical Programs Form. **You may be validated and eligible for one program only.**
3. Complete the Validation Application Form and **submit the completed Form to the Records and Registration Office.** These Forms may be submitted from mid-term to the end of the semester in which you will complete your prerequisites.
4. Records and Registration Office personnel will accept and date your completed Validation Application Form.
5. Validation Application Forms will be validated **only** by Records and Registration Office staff and processed no later than 30 days after the application deadline.
  - a. Qualified students will be assigned a semester and year of validation which will be entered into the student's computer record (e.g., F93 or W94 or S94).
  - b. Nonqualified students must submit another Validation Application Form **after successfully completing** all require prerequisites and other qualifications.
6. The semester and year of validation will be valid for three years if renewed each year with the Application for Continuation Form. A form will be mailed to your address on file with Records and Registration. After that time, a new Validation Application must be submitted prior to attempting to register for the clinical sequence. You must have successfully completed all prerequisites/qualifications required at the time the new Application is submitted. Should you not register within the three-year period, it may be necessary to retake some prerequisite courses.

**Note:** Delta College reserves the right to modify validation and registration procedures for programs with low numbers of validated students at the end of a semester.

## Scholarship Students Experience

**the Delta  
Difference**

"Delta College has been challenging as well as rewarding. With excellent teachers helping me and with this award, I certainly will hold a sincere respect for this school throughout my future career."

*Barbara Lask*

## Clinical Registration - First Semester

1. A special telephone registration will be held for first semester clinical courses in the Health and Nursing Programs. Check each semester's Academic Class Schedule booklet for the special phone-in registration dates, times, and offerings. Special registrations are usually held May/June for Fall semester, November for Winter semester, and March for Spring/Summer semester. Other than Nursing, all health programs normally start in the Fall semester only.
2. Special phone registration will specify your registration priority according to program **and** semester and year of validation. The registration must be certified before students are officially registered. Once the clinical courses are full, an alternate list of qualified students will be developed to include those students who phoned in when specified.

**Note: The alternate list is valid only for the semester. The registration alternate list will not be carried over to the next registration.**
3. After completion of the special telephone registration, registered students will be required to attend clinical orientation sessions. Alternates may be invited to these sessions. Dates and times for orientations are listed in the Academic Class Schedule booklet.
4. Students not making payment by the due date (same as the first due date specified in the Academic Class Schedule booklet for all other students participating in phone registration) or voluntarily cancelling will be deleted from courses.
5. Open positions that result from the above deletions or cancellations in first semester clinical courses will be filled by students on the registration alternate list.
6. Students who drop after the first week of classes will lose their validation and must resubmit a new Validation Application Form. Students will retain their validation through the first week of classes and may not validate for another program during this time. After the first week of clinicals, students who remain in the program, as well as students who drop, lose their validation and must resubmit a new Validation Application Form.
7. You are responsible for completing all clinical courses and requirements in effect on the day the clinical sequence begins.

**Note:** Individual faculty cannot add to published course capacity by accepting first-time enrolled students as overloads. Repeat students will be admitted in compliance with program re-entry procedures.





# Academic Career Education Program Guides

## ACCOUNTING

Career Pathway + Business, Management,  
Marketing and Technology

### Associate in Business Studies Degree

As a graduate of Delta's Accounting associate degree program, you will have the skills to be an accounting assistant. Complexity of the work will vary with the size and volume of the employee's activities and the firm's procedures. Most starting jobs will involve tasks such as: keeping records of day-to-day business transactions; making entries in account ledgers; monitoring cash receipts and disbursements; processing appropriate budgetary costing procedures; and preparing materials needed for financial reports. As you gain experience, you may assume more accounting responsibilities which could involve analyzing financial reports and advising management.

		Sem Hrs
General Education Courses		
LW	220 Lifelong Wellness .....	1
LW	--- Any Approved Lifelong Wellness Requirement .....	1
POL	--- Any Approved American Government Requirement .....	3/4
PSY	101 Applied Psychology OR	
SPH	112 Fundamentals of Oral Communication OR	
SPH	114 Interpersonal Communications .....	3
---	--- General Electives .....	5/6
SUBTOTAL		13/15
Business Courses		
* ACC	211 Principles of Accounting I .....	4
* ACC	212 Principles of Accounting II .....	4
* ACC	214 Microcomputer Accounting Applications .....	4
3* ACC	215 Federal Tax Accounting OR	
ACC	115 Applied Tax - H & R Block .....	3/5
3* ACC	223 Accounting Practices/Working Capital .....	4
3* ACC	224 Accounting Practices/Long Term .....	4
* ACC	233 Cost Accounting .....	3
* CST	133 Intro to Computer Information Technology .....	4
ECN	221 Principles of Economics I .....	4
MGT	153 Introduction to Business .....	3
MGT	251 Business Law I .....	3
* OAT	151 Business Communication I .....	3
* OAT	152 Business Communication II .....	3
OAT	170 Keyboarding .....	2
SUBTOTAL		48/50

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/65

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. ACC 211 prerequisite: one year of high school algebra, MTH 097, or an acceptable score on the College's current assessment instrument.
- 2. Proficiency examinations are available for OAT 170. Keyboarding may be waived and another course substituted.
- 3. If you are planning to enroll in Delta's 3+1 Program, you should select ACC 227 and ACC 228, instead of ACC 223 and 224, and ACC 215 instead of ACC 115.
- 4. The above program is primarily intended to prepare you for a career upon graduation from Delta College. If you plan to transfer to a four-year college, you should use a Business Administration program guidesheet and consult a counselor.
- 5. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 6. Delta College reserves the right to modify program requirements.
- 7. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

## AEROBIC INSTRUCTOR

Career Pathway + Human Services

### Advanced Certificate

Today's fitness industry is rapidly growing. Being a group fitness instructor is no longer just about teaching aerobics. The modern group fitness instructor may be expected to teach a variety of specialties such as step aerobics, indoor cycling, yoga, or cardio kick boxing. This program will offer you the education and certification to teach safe and effective exercise to a wide variety of populations. An understanding of human anatomy and physiology will also be included. Upon completion of this program, you will be eligible to sit for the American Council on Exercise (ACE) certification exam.

		Sem Hrs
Basic Program Requirements		
* BIO	101 Introduction to Anatomy and Physiology .....	4
* LW	116 Tai Chi .....	1
* LW	151 Kick Boxing .....	1
* LW	152 Astanga Yoga .....	1
* LW	153 Dance Aerobics .....	1
* LW	157 Step Aerobics .....	1
* LW	220 Lifelong Wellness .....	1
* LWT	180 Responding to Emergencies .....	2
* LWT	210 Nutrition: The Science of Optimal Living .....	3
* LWT	230 Theory of Strength Training .....	2
* LWT	242 Aerobic Instructor .....	4
* SPH	112 Fundamentals of Oral Communication .....	3
TOTAL CREDITS REQUIRED FOR CERTIFICATE		24

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. Current CPR certification is required for admission to the program and must be maintained throughout the program.
- 2. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 3. Delta College reserves the right to modify program requirements.

# ARCHITECTURAL TECHNOLOGY

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

## Associate in Applied Science Degree/ Certificate of Achievement

As an Architectural Technician, you may assist licensed architects, construction engineers, urban planners and other design personnel in most phases of the development of a building or site projects. This program has an emphasis on job entry skill development for employment in occupations such as: draftsman for installation and shop drawings; building appraiser for financial institutions or real estate firms; estimator or supervisor for contractors; inspector for government agencies.

		Sem Hrs
General Education Courses		
ART 111	Drawing I .....	3
2 ARC 251	History of Architecture .....	2
ENG ---	Any Approved College Composition I Course .....	3/5
ENG ---	Any Approved College Composition II Course .....	3/5
LW 220	Lifelong Wellness .....	1
LW ---	Any Approved Lifelong Wellness Requirement .....	1
MTH ---	Mathematics from Approved List (see below) .....	3/4
POL ---	Any Approved American Government Requirement .....	3/4
CED 280B	Cooperative Education Design Tech .....	1
---	Approved Electives (see list below) .....	4
SUBTOTAL		22/29

### Basic Program Requirements

ARC 101	Materials & Methods of Construction OR	
RC 102	Building Materials .....	3
1 ARC 105	Architectural Drafting I OR	
RC 109	Residential Drafting .....	4
1 ARC 106	Architectural Drafting II .....	4
ARC 111	Mechanical and Electrical Systems for Buildings OR	
RC 206	Plumbing, Heating & Electrical Equipment .....	3
ARC 114	Architectural AutoCAD 2D Basics .....	2
ARC 118	AutoCAD Applications .....	3
ARC 204	Estimating Building Construction OR	
RC 202	Building Materials Estimation .....	3
1 ARC 205	Architectural Drafting III .....	3
1 ARC 206	Architectural Drafting IV .....	3
ARC 211	Elements of Structural Design OR	
RC 211	Elements of Structural Design .....	2
ARC 214	Architectural AutoCAD 3D Basics .....	3
ARC 221	Site Preparation OR	
RC 105	Building Site Surveying .....	3
RC 101	Construction Print Interpretation .....	3
SUBTOTAL		39

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/68

### Approved Electives:

ART 112	Drawing II	MGT 251	Business Law I
ART 115	Basic Design-Two Dimensional	MTH 111	Applied Algebra
ART 116	Basic Design - Three Dimensional	MTH 113	Applied Trigonometry
CST ---	Any Computer Science & Info Technology Course	MTH 119	Intermediate Algebra OR
		MTH 119A	
MGT 131	Small Business Management	MTH ---	Any Math Course 120 or higher
MGT 145	Principles of Sales	PHO ---	Any Course in Photography
MGT 153	Introduction to Business	RC ---	Any Residential Construction Course that is not co-listed

### Certificate Program

4> ARC 214	Architectural AutoCAD 3D Basics .....	3
4> ARC 215	Architectural Rendering Basics .....	3
4> ARC 216	Architecture Photo Realism 3D Advanced .....	3
4> ARC 217	Architectural Animation: Presentation .....	3
SUBTOTAL		12

### NOTATIONS:

1. Courses ARC 105, 106, 205 and 206 must be taken in sequential order. For information about day and/or evening availability of courses, contact a technical career counselor.
2. ART 251 is offered only in the Winter Semester.
3. This program prepares you for a technical level career, but some courses are transferable to baccalaureate degree programs in Architecture. If you want to become an architect, you are advised to consult with a counselor about transfer requirements.
4. > Credits from any of these courses may be used toward a certificate in Architectural Technology.
5. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
6. Delta College reserves the right to modify program requirements.
7. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Students that  
Experience

**the Delta  
Difference**

"The instructors sincerely want you to succeed. They provide the assistance and guidance you need to blossom."

*Dawn Ledesma, Bay City*



## AUTOMOTIVE SERVICE EDUCATIONAL PROGRAM

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### Associate in Applied Science Degree

The Automotive Service Educational Program (ASEP) is an associate degree automotive program designed to upgrade your technical competence and professional level as an incoming dealership technician. At Delta College, the program requires 111 weeks of training to complete, with 60 weeks spent on the Delta College campus. The remainder of the time spent in this two-year period is in a General Motors dealership. Each specialized subject is dealt with in the classroom and laboratory on campus and is immediately followed by related work experience in the dealership. This rotation system continues until the program is completed. This is a suggested enrollment sequence for full time students. It is suggested that part time students see an advisor for scheduling assistance.

The automotive courses must be taken in the semesters specified.

#### First Semester

SPH 114	Interpersonal Communications .....	3
AGM 131	Automotive Electronics Service .....	4
AGM 132	Brakes, ABS, TCS Service .....	5
AGM 133	Steering, Suspension Service .....	6
1 AGM 134	Dealership Work Experience I .....	2
SUBTOTAL		20

#### Second Semester

CST 238	GM Information Systems .....	2
LW 220	Lifelong Wellness .....	1
AGM 141	Specialized Engine Repair Service .....	6
AGM 142	Electronic Engine, Emission Controls Service .....	9
1 AGM 143	Dealership Work Experience II .....	2
SUBTOTAL		20

#### Third Semester

ENG ---	Any Approved College Composition I Course .....	3/5
AGM 231	Driveline and Manual Transmission Service .....	3
AGM 232	Automatic Electronic Transmissions Service .....	8
AGM 233	HVAC Service .....	4
1 AGM 234	Dealer Work Experience III .....	2
SUBTOTAL		20/22

#### Fourth Semester

ENG 112	Any Approved College Composition Course OR	
ENG 113	Technical Communications .....	3
LW ---	Any Approved Lifelong Wellness Requirement .....	1
POL ---	Any Approved American Government Requirement .....	3/4
WELD101	Fuel Gas Weld Cutting .....	1
AGM 241	Body Electronics Service .....	4
SUBTOTAL		12/13

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 72/75

#### NOTATIONS:

1. These courses are taught at a dealership and begin late in the semester indicated and are completed in the following semester.
2. Since half of the program is spent at the dealership, you are required to have a sponsoring General Motors dealer. The main responsibility of the dealership is to provide employment during all of the work experience periods.
3. Any approved College Composition II course may be substituted for ENG 113.
4. All tuition, fees, housing (if needed), textbook costs, and tools are your responsibility.
5. For more information call ASEP Coordinator 754-6558, Fax 753-4730.
6. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
7. Delta College reserves the right to modify program requirements.



# AUTOMOTIVE SERVICE TECHNOLOGY

## Career Pathway ♦ Engineering/Manufacturing and Industrial Technology

### Associate in Applied Science Degree/ Advanced Certificate

In addition to being trained to enter the automotive field as a technician or service writer, you will have a broader based education by completing the Associate degree. You may also choose to continue your education by seeking a Baccalaureate degree.

Both certificate and Associate degree is available. For those interested in specific segments of an automotive course, short term courses are available and are identified by the core course number and followed by the letter A, B, C, etc.

	Sem Hrs
<b>Automotive Service Courses</b>	
<b>Introductory Automotive</b>	
* AUT 100 Introduction to Automotive Service .....	3
* AUT 108 Automotive Electronics .....	3
SUBTOTAL	6
<b>1st Automotive Cluster</b>	
AUT 110 Auto Electronics I OR .....	4
AUT 110A Automotive Battery Service AND .....	1
AUT 110B Automotive Starting System AND .....	1
AUT 110C Auto Charging System AND .....	1
AUT 110D Auto Wiring Diag. ....	1
 AUT 112 Engine Service .....	6
AUT 114 Brake System Service OR .....	5
AUT 114A Drum Brakes AND .....	1.5
AUT 114B Disc Brakes AND .....	1.5
AUT 114C Hydraulic/Power Assist AND .....	1
AUT 114D Anti-Lock Brakes .....	1
SUBTOTAL	15
<b>2nd Automotive Cluster</b>	
AUT 120 Driveline Service OR .....	6
AUT 120A Clutch Service AND .....	.8
AUT 120B Manual Tran/Transaxle AND .....	1.5
AUT 120C Rear Axle/Diff. Ser. AND .....	2.0
AUT 120D Front Wheel/4 Wheel Drive .....	1.7
AUT 122 Auto Transmission Service .....	8
SUBTOTAL	14
<b>3rd Automotive Cluster</b>	
AUT 210 Auto Electronics II OR .....	3
AUT 210A Airbags/Columns AND .....	.6
AUT 210B Power Locks/Windows AND .....	.6
AUT 210C Instruments/Lighting AND .....	.6
AUT 210D Cruise Control AND .....	.6
AUT 210E Wiper Systems .....	.6
 AUT 212 Suspension System Service OR .....	7
AUT 212A Frame Linkage/Manual Gears AND .....	2
AUT 212B Suspension Systems/Alignment AND .....	4
AUT 212C Power Steering/Electronics .....	1
 AUT 214 Heating/Air Cond. Service OR .....	5
AUT 214A Heating/Cooling System AND .....	2
AUT 214B Auto Air Cond. Service .....	3
SUBTOTAL	15
<b>4th Automotive Cluster</b>	
AUT 220 Electronic Systems Service .....	2
AUT 222 Fuel System Service OR .....	6
AUT 222A Carb/Throttle Body Service AND .....	1
AUT 222B Carb Fuel System Service AND .....	1
AUT 222C Fuel Injection Supply Service AND .....	1.5
AUT 222D Carb Fuel Delivery Service AND .....	1

AUT 222E TBI/PFI Fuel Delivery Service .....	1.5
AUT 224 Engine Performance Service OR .....	6
AUT 224A Ignition Principles AND .....	1.5
AUT 224B Eng. Per. Test Equipment AND .....	1.5
AUT 224C Chry. Eng. Perf. Ser. AND .....	1
AUT 224D GM Eng. Perf. Ser. AND .....	1
AUT 224E Ford Eng. Perf. Ser. ....	1
SUBTOTAL	14

#### Service Internship

1. AUT 260 Auto Service Skills .....	1
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#### General Education Courses

CST 103 Windows Foundations .....	1
MGT 110 Business Math .....	3
ENG --- Any Approved College Composition I Course .....	3/5
ENG 113 Technical Communications .....	3
LW 220 Lifelong Wellness .....	1
LW --- Any Approved Lifelong Wellness Requirement .....	1
POL --- Any Approved American Government Requirement ..	3/4
PSY 101 Applied Psychology OR .....	
PSY 211 General Psychology .....	3/4
ENV 130 Environmental Management: Pollution Prevention ..	1
SUBTOTAL	19/23

#### Elective

AUT 252 Automotive Performance Functions .....	5
--	---

#### Certificate Requirements

* AUT 100 Introduction to Automotive Service .....	3
* AUT 108 Introduction to Automotive Electronics .....	3
2 AUT --- Courses above AUT 100 & 108 .....	24
1 AUT 260 Automotive Service Skills .....	1
ENV 130 Environmental Management: Pollution Prevention ..	1
MINIMUM CREDITS REQUIRED FOR CERTIFICATE	32

#### Associate Degree Requirements

* AUT 100 Introduction to Automotive Service .....	3
* AUT 108 Introduction to Automotive Electronics .....	3
2 AUT --- Courses above AUT 100 & 108 .....	39
1 AUT 260 Automotive Service Skills .....	1
--- General Education Courses .....	19/23
MINIMUM CREDITS REQUIRED FOR ASSOCIATE DEGREE	65/69

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course prior to enrolling in any other automotive course.
- 1. The selection of an Automotive Service Skills internship is done after consulting with the automotive faculty.
- 2. The minimum Associate degree requirements include completion of three clusters. You are encouraged to complete all four automotive clusters. Minimum Certificate requirements include completion of two clusters. You are, however, encouraged to complete more than two clusters.
- 3. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 4. Delta College reserves the right to modify program requirements.
- 5. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

*Also see "Dual Degrees"*



# AVIATION FLIGHT TECHNOLOGY

## Career Pathway ♦ Engineering/Manufacturing and Industrial Technology

### Associate in Applied Science/ Advanced Certificate

You will obtain the knowledge, skill and a portion of the aeronautical experience\* necessary to meet the requirements for a Commercial Pilot Certificate (airplane category) and Instrument Rating. You will be prepared to transfer to a baccalaureate institution with degree programs for professional pilots.

\*You must arrange and pay for additional aeronautical experience (flight hours) to meet Federal Aviation Regulations, Part 61, requirements for Commercial Pilot.

	Sem	Hrs
General Education Courses		
CST 132 Computer Literacy on the Macintosh OR		
CST 133 Introduction to Computer Information Technology .....	3/4	
ENG --- Any Approved College Composition I Course .....	3/5	
ENG --- Any Approved College Composition II Course OR		
ENG 113 Technical Communication .....	3/5	
GEO 111 Physical Geography .....	4	
MTH 119 Intermediate Algebra OR MTH 119A .....	4	
LW 220 Any Approved Lifelong Wellness Requirement .....	1	
LW --- Any Approved Lifelong Wellness Requirement .....	1	
POL --- Any Approved American Government Requirement .....	3/4	
SPH 114 Interpersonal Communications .....	3	
PSY 211 General Psychology .....	4	
# --- --- Humanities Electives .....	5	
SUBTOTAL		34/40

#### Basic Program Requirements

>* AFT 101	Private Pilot Ground Training .....	4
>* AFT 105	Primary Pilot Flight Train I .....	2
>* AFT 106	Primary Pilot Flight Train II .....	3
>* AFT 201	Instrument Pilot Ground Train .....	4
>* AFT 202	Aviation Meteorology .....	2
>* AFT 210	Commercial Pilot Ground Train .....	4
>* AFT 215	Adv. Pilot Flight Training I .....	2
>* AFT 216	Adv. Pilot Flight Training II .....	3
>* AFT 217	Adv. Pilot Flight Training III .....	2
>* AFT 218	Adv. Pilot Flight Training IV .....	3
>* GEO 103	Introduction to Meteorology .....	4
SUBTOTAL		33

#### Recommended Electives

CHM 101	General Chemistry I .....	5
MTH 160	Calculus for the Social and Managerial Sciences .....	4
PHY 101	Applied Physics OR	
PHY 111	General Physics I .....	4
SUBTOTAL		13

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE	67/73
TOTAL CREDITS REQUIRED FOR CERTIFICATE	33

- > **Certificate Option:** A Certificate will be awarded when courses preceded by a greater than (>) sign are successfully completed. There are additional hours of aeronautical experience (flying hours) required to meet Federal Aviation Regulations, part 61, to qualify for the examination for a Commercial Pilot Certificate (airplane category) and an Instrument Rating.

#### NOTATIONS:

- # Check transfer school requirements in the selection of the five hours Humanities' Requirement.
- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. This Program meets MACRAO requirements of 6 English, 8 Science, 8 Social Science and 8 Humanities credits.
- 2. Permission of Coordinator and meeting Federal Aviation Administration criteria are required prior to enrolling in any of the following courses: AFT 105, AFT 106, AFT 215, AFT 216, AFT 217, and AFT 218.
- 3. With proper validation Delta College will grant the following program course credit: FAA Private Pilot Certification: AFT 101, AFT 105, AFT 106; FAA Instrument Rating: AFT 201, AFT 215, AFT 216; FAA Commercial Certification: AFT 210, AFT 217, AFT 218.
- 4. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 5. Delta College reserves the right to modify program requirements.
- 6. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.



## CENTRAL SERVICE PROCESSING AND DISTRIBUTION TECHNOLOGY

Career Pathway ♦ Health Services

### Certificate of Achievement

The primary function of the Central Service Processing and Distribution Technician is to process the instrumentation and supplies provided by the central service department for the surgical needs of the hospital. Students who complete this program are eligible to sit for the American Society for Healthcare Central Service Personnel (ASHCSP) national certifying examination.

	Sem	Hrs
Basic Program Requirements		
*CSP 101 Central Service Processing I .....	4	
+*CSP 102 Clinical Externship .....	4	
<b>TOTAL CREDITS REQUIRED FOR CERTIFICATE</b>	<b>8</b>	

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- +CSP 101 must be completed with a minimum of a "C" (2.0) grade prior to taking CSP 102.
- 1. As an applicant, you must be a high school graduate or submit a GED equivalency certificate.
- 2. You must have transportation available when taking CSP 102, as sites may not be in your community.
- 3. There may be additional uniform and name tag expenses that will be explained at the orientation to the clinical.
- 4. You are responsible for paying the cost of any medical care which might be necessary if you are injured or become ill as a result of clinical practice activities. The College does not provide insurance coverage for such situations.
- 5. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 6. Delta College reserves the right to modify program requirements.

## CHEMICAL PROCESS TECHNOLOGY

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### Associate in Applied Science Degree/ Advanced Certificate

Chemical Process Technology program prepares you for employment as a process operator in the chemical/material processing industry. The operator role includes but is not limited to the following functions: knowledge and upholding of the standards regarding health, safety and the environment; working with the handling, transporting, storage and disposal of chemicals and other materials in compliance with all state and federal regulations; the operation, monitoring, and controlling of processes both continuous and batch; interfacing with the chemical engineers and technicians involved with these processes; managing normal maintenance of equipment, calibration of instrumentation, and troubleshooting as needed.

	Sem	Hrs
General Education Courses		
>* CHM 105 Technical Chemistry I .....	5	
>* CHM 106 Technical Chemistry II .....	5	
> ENG --- Any Approved College Composition I Course .....	3/5	
ENG 113 Technical Communications .....	3	
>* MTH 119 Intermediate Algebra OR MTH 119A .....	4	
MTH 208 Elementary Statistics .....	3	
>* PHY 101 Applied Physics .....	4	
LW 220 Lifelong Wellness .....	1	
LW --- Any Approved Lifelong Wellness Requirement .....	1	
> ENV 100 Environmental Regulations .....	3	
ENV 152 Emergency Response to Industrial Spills .....	1.6	
SPH 112 Fundamentals of Oral Communications OR		
SPH 114 Interpersonal Communications .....	3	
POL --- Any Approved American Government Requirement .....	3/4	
<b>SUBTOTAL</b>	<b>39.6/42.6</b>	
Basic Program Requirements		
>* CPI 110 Introduction to Process Industries .....	2	
>* CPI 120 Introduction to Process Operations .....	2	
>* CPI 210 Basic Chemical & Unit Operations .....	4	
>* CPI 220 Process Operations Management .....	3	
* CPI 230 Process Control .....	3	
* CPI 240 Process Troubleshooting .....	3	
* CPI 250 Advanced Chemical Operations .....	4	
* CPI 260 Process Operations Management II .....	4	
<b>SUBTOTAL</b>	<b>25</b>	
<b>TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE</b>	<b>64.6/67.6</b>	
<b>TOTAL CREDITS REQUIRED FOR CERTIFICATE</b>	<b>35/37</b>	

#### Recommended Electives

- |   |   |
|---|---|
| 1 CST 133 Introduction to Computer Information Technology ..... | 4 |
|---|---|

>**CERTIFICATE OPTION** - A Certificate will be awarded when you successfully complete courses preceded by a greater than sign ">".

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. If your computer experience is limited, CST 133 is suggested.
- 2. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 3. Delta College reserves the right to modify program requirements.
- 4. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.



# CHEMICAL TECHNOLOGY

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

## Associate in Applied Science Degree

A degree in Chemical Technology may transfer or could lead to a position with area employers as a Technologist. As a Chemical Technologist, you will operate many kinds of laboratory instruments, be involved with data collection and analysis, and do technical report writing and research projects. This Associate in Applied Science program includes core courses that allow flexibility in choosing a technical focus. Degrees in Water/Wastewater Treatment Technology, Chemistry, Biology, Physics or Engineering may also be pursued using most of the credits from this program.

		Sem	Hrs
General Education Courses			
CHM 111	General Inorganic Chemistry I .....	4	
CHM 112	General Inorganic Chemistry II .....	4	
CHM 210	Organic Chemistry I .....	4	
CHM 210L	Organic Chemistry I Laboratory .....	1	
CHM 220	Organic Chemistry II .....	4	
CHM 220L	Organic Chemistry II Laboratory .....	1	
CST 133	Introduction to Computer Information Systems OR		
CST 134	Micro Computers in Business Using MS Office .....	4/3	
ENG ---	Any Approved College Composition I Course .....	3/5	
ENG ---	Any Approved College Composition II Course OR		
ENG 113	Technical Communications .....	3/5	
LW 220	Lifelong Wellness .....	1	
LW ---	Any Approved Lifelong Wellness Requirement .....	1	
MTH 208	Elementary Statistics .....	3	
4 PHY 101	Applied Physics OR .....		
PHY 111	General Physics OR .....	4/5	
PHY 211	Physics I .....		
PHY 112	General Physics II OR .....		
PHY 212	Physics II OR .....	4/5	
BIO 110	Environmental Science OR .....		
BIO 111	Principles of Biology OR .....		
GLG 130	Environmental Geology .....		
POL ---	Any Approved American Government Requirement .....	3/4	
1 ---	Humanities Electives .....	8	
2 ---	Social Science Elective .....	4/5	
SUBTOTAL		55/64	

### Basic Program Requirements

CHM 230	Chemical Analysis/Instrumentation .....	4
CHM 231	Troubleshooting for Analytical Instrumentation .....	1
CT 100	Introduction to Chemical Technology .....	2
3 SCI 250	Research Project in Science .....	2/6
SUBTOTAL		9/13

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 64/77

### Recommended Electives

CHM 221/222	Organic Biochemistry .....	3/1
MTH 121	Trigonometry .....	3
MTH 151	Pre-Calculus .....	4
MTH 161	Calculus I (and higher) .....	4
WET 110	Water Treatment Technologies .....	3
WET 112	Wastewater Treatment Technologies .....	3
WET 220	Water Quality Analysis and Microbiology .....	4

### NOTATIONS:

1. Courses must be completed in at least two different subject areas. Consult page 97 of this catalog for a list of approved Humanities courses. Industry recommends enrollment in SPH 112 and/or SPH 114 and PHL 221.
2. To meet the MACRAO agreement, a total of eight Social Science credits must be earned. See the Graduation Requirements sections of this catalog. Industry recommends enrollment in ECN 221 and POL 111 to fulfill the 8 credits required in Social Science.
3. A minimum of 2 credits is required for SCI 250. However, in consultation with faculty, a research project for up to 6 credits may be chosen.
4. May transfer as Physics or Science credit only, depending on the institution.
5. To have the MACRAO stamp placed on your transcript, fill out a MACRAO Request Form at the Records and Registration Office with your Graduation Request.
6. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
7. Delta College reserves the right to modify program requirements.
8. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Scholarship Students  
Experience

the Delta  
Difference

"Being a mother of three always has its own expenses to deal with. The examples of sacrifice as well as dedication to a goal are attributes I want to pass on to my kids. Thank you for helping me accomplish this."

Stena Schaefer

## Associate in Applied Arts Degree/ Advanced Certificate

Child development teachers work in a variety of settings providing care and guidance of young children. This care addresses the mental, social, physical, and emotional growth and development of the child. As a child development teacher, you should be able to work under supervision and work cooperatively with other personnel. Each teacher should also gain the respect, confidence, and cooperation of children, and maintain discipline. Physically, you must maintain good health and be able to stoop, kneel, crouch, and crawl. Good vision and hearing is necessary as well as being able to lift up to 40 pounds. Applicants for child development positions are required to pass a physical exam, tuberculin test bi-annually, and may have to undergo tests or immunization for other communicable diseases.

As a supplement to the supportive skills learned from courses completed in the Child Development Certificate program, the Associate in Applied Arts degree program will also stress leadership skills which are needed in a director position. In addition to the employment opportunities offered by the certificate program, graduates of this degree program will also be qualified to apply for positions as lead teachers, center directors and are eligible to apply for a license for their own child care business.

		Sem	Hrs
General Education Courses			
BIO 111	Principles of Biology .....	4	
ENG ---	Any Approved College Composition I Course .....	3/5	
ENG ---	Any Approved College Composition II Course .....	3/5	
LW 220	Lifelong Wellness .....	1	
LW ---	Any Approved Lifelong Wellness Requirement .....	1	
POL ---	Any Approved American Government Requirement .....	3/4	
1 ---	Humanities Electives .....	8	
2 ---	Natural Science Elective .....	8	
SUBTOTAL			27/32

Basic Program Requirements			
>*	CD 110	Infant/Toddler Development .....	3
>3	CD 111	Introduction to Child Development .....	2
>*	CD 112	Learning Center Activities .....	2
>*	CD 113	Child Guidance Strategies .....	3
>*	CD 114	Theories of Child Development .....	3
>*3,4,5	CD 115P	Introductory Community Program .....	2
*4,5	CD 115S	Introductory Specialized .....	2
>*6	CD 116	Diversity in Child Care Practice .....	3
>*5,7	CD 117	Student Teaching Practicum .....	6
*8	CD 210	Child Development Program Management .....	3
>*	LWT 165	Community First Aid .....	1
>*	PSY 223	Child Psychology .....	3
SUBTOTAL			32
TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE			63/68
TOTAL CREDITS REQUIRED FOR CERTIFICATE			33

9 >**CERTIFICATE OPTION** - A Certificate will be awarded when you successfully complete courses preceded by a greater than sign ">" (28 credits minimum).

### NOTATIONS:

\* A "C" (2.0) minimum grade is required in each asterisked course.

- Requires courses in two different departments. Suggested Humanities Electives: ASL 111, American Sign Language I, and LIT 253, Books for Pre-School Children.
- Requires courses in two different departments; at least one must include a lab. Suggested Electives: BIO 102, Microbiology and Infection Control; or BIO 199, Human Heredity and Sexuality; or BIO 111, Principles of Biology, or MTH 110, Mathematics for Elementary Teachers.
- CD 111 and CD 115P may be articulated if the student has earned a Child Development Associate (CDA) credential, an elementary education degree or a high school career-technical certificate.

Credit in either or both courses will be awarded upon successful completion ("C" 2.0 minimum grade) in any Child Development course and a total of 6 credits earned at Delta College with at least a "C" grade. Articulated credits will not count towards FIA requirements for a director using a CDA certificate. The 12 required credits must be regular classes with a grade for credit.

- Practicum students *only*: A Child Development information session is held in April, August and November. You must attend one of these sessions for details regarding all three practicums. Be sure you notify the Counseling Office or Records/Registration Office to state your major as CD to be included in the mailing list for meeting dates.
- All CD 115P, CD 115S and CD 117 students must complete the following and submit the appropriate documentation to the program coordinator:
  - Physical (Health Appraisal):** You will be required to submit a completed recent physical form signed by a licensed physician declaring, to the best of the physician's knowledge, that you are physically capable of performing the duties that are required for the safe care of children.
  - TB Skin Test:** You must submit evidence of freedom from communicable tuberculosis. Tests available free to Delta students (N-102).
  - Acknowledgement and Release Form:** You will be required to sign a document asking whether you have ever been convicted of an offense other than a minor traffic violation, and whether you have ever been involved in substantiated abuse or neglect of children.
  - Student Data Sheet**
  - Employment and Volunteer Contract**
  - Note:** CD115P requires 90 hours of volunteer work at a licensed program *other than* your current employment site, CD115S requires 60 hours of volunteer work at a licensed program *other than* your own, and CD117 requires 150 hours of student teaching in a classroom *other than* your own. All must be unpaid and outside of your work schedule, 2-3 days per week.
- If all requirements have been met except CD 210, the student has the option of the Associate of Arts degree in which CD 116 can be counted toward the Social Science requirement.
- For the Basic Program Requirements: You must have a minimum grade of "C" (2.0) in CD 115P and CD 115S in order to enroll in CD 117, Student Teaching Practicum.
- CD 210, Child Development Program Management must be taken after completion of Delta's Child Development Certificate courses. CD 210 is offered in the Spring and Winter semesters.
- Current First Aid and CPR certification is required to enroll in CD210.
- File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- Delta College reserves the right to modify program requirements.
- If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.



# COMPUTER AIDED DRAFTING

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

## Advanced Certificate

As a Computer Drafter, you will make detailed manual or computer drawings of products and machinery from sketches and specifications conceived by engineers and designers. The finished drawings are used as working plans for engineering and manufacturing purposes. Depending on experience and level of responsibility, duties may vary from preparing basic drawings to modifying the finished design using computer aided design equipment.

In order to enter this area of work, you should be able to: work within precise limits or standards of accuracy, concentrate for long periods of time, visualize 3-dimensional objects from drawings or pictures, see detail in objects or drawings, and recognize slight differences in shapes and shadings. Computer skills are a requirement.

	Sem	Hrs
Technical Courses		
CAD 114 Auto CAD Introduction .....	2	2
CAD 214 Auto CAD Effective Techniques .....	2	2
CAD 224 Auto CAD Advanced .....	2	2
CAD 226 Auto CAD 3D Advantage .....	2	2
CED 280B Cooperative Education: Design Technology .....	1	
DRF 104 Basic Mechanical Design OR		
DRF 105 Beginning Mechanical Design .....	4/3	
DRF 107 Intermediate Mechanical Design .....	3	
DRF 128 Geometric Tolerancing .....	2	
MDA 205 Rapid Prototyping & Tooling .....	.6	
MDA 211 Interactive Part Modeling .....	2.4	
MFG 111 Manufacturing Processes .....	3	
MS 113 Machining Processes .....	2	
MT 110 Machine Tool Calculations OR		
MTH 119 Intermediate Algebra OR MTH 119A .....	4	
TOTAL CREDITS REQUIRED FOR CERTIFICATE 29/30		

### NOTATIONS:

1. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
2. Delta College reserves the right to modify program requirements.



# COMPUTER NUMERICAL CONTROL TECHNOLOGY

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

## Associate in Applied Science Degree/ Advanced Certificate

As a CNC Machine Tool Programmer/Operator, you will use computer driven machine tools such as lathes, mills, profilers, lasers, water jet, wire electrical discharge machines, tube benders, punches, and grinders to shape metals to precise dimension. Although some programmer/operators can work with a wide variety of CNC machine tools, most specialize in one or two types. Specific duties may include: studying blueprints, sketches; tool, fixture and machine set up; programming and editing; machine workpieces; inspecting, verifying, and certifying product for dimensional accuracy; light duty repair and maintenance of the CNC machine. Many of the courses listed below require prior basic machine tool work experience and/or high school or skill center classes in basic machine tool.

### General Education Courses

		Sem	Hrs
ENG ---	Any Approved College Composition I Course .....	3/5	
ENG 113	Technical Communications .....	3	
LW 220	Lifelong Wellness .....	1	
LW ---	Any Approved Lifelong Wellness Requirement .....	1	
POL ---	Any Approved American Government Requirement .....	3/4	
PSY 101	Applied Psychology OR		
SPH 114	Interpersonal Communications OR		
SPH 112	Fundamentals of Oral Communications .....	3	
	<b>SUBTOTAL</b>	<b>14/17</b>	

### Basic Program Requirements

> CAD 114	Autocad Introduction .....	2	
>1 CED 280D	Cooperative Education: Mechanical Technology .....	1	
> CST 103	Windows Foundations OR		
CST 106	Internet Foundations .....	1	
> CNC 160	Computer Numerical Control Programming I .....	3	
> CNC 201	CNC Tooling and Special Setups .....	2	
CNC 284	CNC Practicum .....	4	
> DRF 104	Basic Mechanical Design OR		
DRF 105	Beginning Mechanical Design .....	3/4	
> MS 103	Machine Shop III .....	4	
> MS 104	Machine Shop IV .....	4	
> MS 112	Ferrous Heat Treatment .....	2	
> MS 120	Machinist's Handbook .....	2	
> MT 110	Machine Tool Calculations .....	4	
	<b>SUBTOTAL</b>	<b>32/33</b>	

If you are an Associate degree candidate, you must select five courses from the CNC Core. (Three must be from the **On-Line Programming/Operation Group** and two must be from the **Off-Line Programming Group**.) 20

> If you are a Certificate candidate, you must select four courses from the CNC Core. (Three must be from the **On-Line Programming/Operation Group**.) 16

### CNC Core

#### On-Line Programming/Operation

Beginning	Advanced		
CNC 210	CNC 250	Haas Turning Center .....	4
CNC 212	CNC 252	Heidenhain TNC-151 Control .....	4
CNC 213	CNC 253	OSP-5000 LG Control .....	4
CNC 214	CNC 254	Anilam GXM Control .....	4
CNC 216	CNC 256	Mazatrol M32/M2 Control .....	4
CNC 217	CNC 257	JAPT 3J Control .....	4
CNC 218	CNC 258	Boston Digital SPC-EIA/ISOControl .....	4
CNC 219	CNC 259	Haas Machining Center .....	4

### CNC Core

#### Off-Line Programming

Beginning	Advanced		
CNC 221	CNC 261	SURFCAM .....	4
CNC 223	CNC 263	TM-APT-GL .....	4
CNC 225	CNC 265	Mastercam .....	4
CNC 226	CNC 266	CAM M-2/M-32 .....	4
CNC 230	CNC 270	ACU. CARV .....	4
		<b>TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE</b>	<b>65/69</b>

**TOTAL CREDITS REQUIRED FOR CERTIFICATE** 43/44

### Technical Electives Suggested for Enrichment

IS 110	Industrial Supervision .....	3
MT 220	Introduction to Fluid Power .....	3

>**CERTIFICATE OPTION** - A Certificate will be awarded when you successfully complete courses preceded by a greater than sign ">"

### NOTATIONS:

1. In a ladder program, CED 280D is only required to be taken one time.
2. See page 96 for graduation requirements.
3. Delta College reserves the right to modify program requirements.
4. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.



# COMPUTER SCIENCE & INFORMATION TECHNOLOGY

Career Pathway ♦ Business, Management, Marketing and Technology

## OPTIONS:

### ACCOUNTING PROGRAMMING COMPUTER APPLICATION SPECIALIST

## Associate in Business Studies Degree/ Advanced Certificate

Computers can process masses of information rapidly and accurately. Delta College offers three Computer Information Systems degree options: Programming; Computer Applications Specialist; Accounting. A programmer prepares detailed instruction (a program) using special computer language to direct the computer through the steps needed to complete an operation. A computer specialist with accounting skills will be able to understand the accounting language and computerize the data to produce special accounting reports and functions. A computer application specialist is involved with computer programs that handle the basic functions of word processing, spreadsheets, communications (internet), and graphics. You must complete all "Basic Core Program" courses plus courses listed in one of the three options.

		Sem	Hrs
General Education Courses (all options)			
LW 220	Lifelong Wellness .....	1	
LW ---	Any Approved Lifelong Wellness Requirement .....	1	
POL ---	Any Approved American Government Requirement .....	3/4	
Select one of the following:			
MGT 203	Business Ethics OR		
PHL 203	Business Ethics .....	(3)	
GEO 111	Physical Geography .....	(4)	
PHL 221	Critical Thinking & Logic .....	(4)	
PSY 101	Applied Psychology .....	(3)	
PSY 211	General Psychology .....	(4)	
SPH 112	Fundamentals of Oral Communication .....	(3)	
SPH 114	Interpersonal Communications .....	(3)	
SUBTOTAL			8/10

Basic Program Requirements (all options)			
> * ACC 211	Principles of Accounting I .....	4	
* ACC 212	Principles of Accounting II .....	4	
> CST 103	Windows Foundations .....	1	
* CST 106	Internet Foundations .....	1	
* CST 110	Basic Web Page Development .....	1	
> CST 121	Introduction to AS400 .....	1	
> CST 123	Windows Operating Systems .....	1	
CST 126	UNIX Operating System .....	2	
> * CST 133	Introduction to Computer Information Technology .....	4	
> CST 155	Microsoft Excel .....	3	
CST 170	Principles of Computer Programming I .....	1	
> * CST 171	Visual BASIC Programming I .....	2	
CST 221	Information Storage & Retrieval .....	3	
> * CST 257	Database-MS Access .....	3	
3> * OAT 151	Business Communication I .....	3	
OAT 152	Business Communication II .....	3	
SUBTOTAL			37

Requirements for Accounting Option			
ACC 214	Microcomputer Accounting Applications (concurrently with ACC 212) .....	4	
* ACC 223	Accounting Practices/Working Capital .....	4	
* ACC 224	Accounting Practices/Long Term .....	4	
2 MTH 208	Elementary Statistics .....	3	
---	Elective .....	3	
SUBTOTAL			18
TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE			63/65

Requirements for Programming Option			
CST 177	Principles of Computer Programming II .....	1	
CST 181	C++ Programming .....	3	
CST 235	Systems Analysis & Design .....	3	
* CST 275	COBOL Programming I .....	3	
MTH 119	Intermediate Algebra OR MTH 119A .....	4	
Select electives from below: .....			4/6
CST 183	JAVA Programming .....	(3)	
CST 271	Visual Basic Programming II .....	(3)	
CST 273	MS Applications Using Visual Basic .....	(2)	
CST 276	COBOL Programming II .....	(3)	
CST 281	Data Structures Using C++ .....	(3)	
CST 282	C++ Object-Oriented Programming .....	(2)	
SUBTOTAL			18/20
TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE			63/67

Requirements for Computer Application Specialist Option			
> CST 134	Microcomputers in Business Using MS Office .....	3	
CST 147	Presentation Graphics Using Power Point .....	2	
CST 226	Local Area Networks .....	4	
CST 273	MS Applications Using Visual Basic .....	2	
Select electives from below: .....			6
MGT 110	Business Math .....	(3)	
MGT 131	Small Business Management I .....	(3)	
MGT 132	Small Business Management II .....	(3)	
> MGT 143	Principles of Advertising .....	(3)	
MGT 153	Introduction to Business .....	(3)	
MTH ---	Elective (maximum of 3 MTH credits) .....	(3)	
---	Elective (maximum of 1 general elective credit) .....	(1)	
SUBTOTAL			17
TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE			62/64

CERTIFICATE OPTION: Computer Application Specialist			
> * ACC 211	Principles of Accounting I .....	4	
> CST 103	Windows Foundations .....	1	
> CST 104	Microsoft Word foundations AND		
> CST 204	Microsoft Word Intermediate		
OR			
> CST 148	WordPerfect for Windows-Beginning AND		
> CST 248	WordPerfect for Windows-Intermediate .....	3	
> CST 121	Introduction to AS400 .....	1	
> CST 123	Windows Operating Systems .....	1	
> * CST 133	Introduction to Computer Information Technology .....	4	
> CST 134	Microcomputers in Business Using MS Office .....	3	
> CST 155	Microsoft Excel .....	3	
> * CST 171	Visual BASIC Programming I .....	2	
> CST 226	Local Area Networks .....	4	
> * CST 257	Database-MS Access .....	3	
> MGT 143	Principles of Advertising .....	3	
3> * OAT 151	Business Communication I .....	3	
TOTAL CREDITS REQUIRED FOR CERTIFICATE			35

> **Computer Application Specialist Certificate Option only.**  
A certificate will be awarded to you when you successfully complete these courses.

## NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. Proficiency in keyboarding is expected in all CST classes. OAT 170 is available for those students who need to build keyboarding skills.
- 2. Additional Algebra prerequisites may be required depending on your background.
- 3. You may substitute any approved College Composition I and II course for OAT 151 and 152. (Recommended for transfer students)
- 4. The above curricula are intended to prepare you for a career upon graduation from Delta College. If you are planning to transfer to a Baccalaureate degree program you should consult with a counselor before enrolling in computer, business, or general education courses so that specific transfer college requirements can be completed.
- 5. See page 96 for graduation requirements.
- 6. Delta College reserves the right to modify program requirements.
- 7. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

# CONSTRUCTION MANAGEMENT

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

## Associate in Applied Science Degree

The Construction Management program is designed to acquaint you with management/business operations and knowledge of the practices and procedures relating to the construction industry. The construction course will acquaint you with various materials, procedures, types of fabrication, and methods of resolution. Technical problem solving will be stressed.

The business components of this program will teach you basic business structure and practices. Such training is invaluable in the start-up and maintenance of a profitable construction business. Other avenues of employment can be sought in construction supervision, material representation, and material management and control.

	Sem	Hrs
General Education Courses		
LW 220 Lifelong Wellness .....	1	
LW --- Any Approved Lifelong Wellness Requirement .....	1	
POL --- Any Approved American Government Requirement .....	3/4	
SPH 202 Oral Communications for Managers .....	3	
SUBTOTAL		8/9

Technical Management Courses		
ACC 111 Introductory Accounting OR		4
ACC 211 Principles of Accounting .....	1	
3* CED 280A Cooperative Education: Technical Management .....		1
CST 133 Introduction to Computer Information Technology OR		3/4
CST 134 MicroComputers in Business Using MS Office .....	3	
* MGT 131 Small Business Management I .....	3	
MGT 153 Introduction to Business .....	3	
MGT 246 Supervision .....	3	
MGT 251 Business Law I .....	3	
OAT 151 Business Communication I .....	3	
OAT 152 Business Communication II .....	3	
SUBTOTAL		26/27

Construction Management Courses		
RC 101 Construction Print Interpretation .....	3	
ARC 101 Materials and Methods of Construction OR		3
RC 102 Building Materials .....	3	
ARC 221 Site Preparations OR		3
RC 105 Building Site Surveying .....	4	
RC 106 Concrete & Foundations .....	2	
RC 108 Construction Safety .....	3	
RC 200 Construction Contracting Rules & Regulations .....	3	
ARC 204 Estimating Building Construction OR		3
RC 202 Building Materials Estimation .....	3	
ARC 111 Mechanical and Electrical Systems for Buildings .....	2	
ARC 211 Elements of Structural Design OR		3
RC 211 Elements of Structural Design .....	3	
* RC 212 Building System Components .....	29	
SUBTOTAL		63/64
TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE		

### NOTATIONS:

\*A "C" (2.0) minimum grade is required in each asterisked course.

1. As a prerequisite to Residential Construction classes, you must have obtained 19 or better on the numerical skills/math portion of the ASSET test.
2. If you are in Delta's 3+1 program, see your counselor for your course selection at Delta College during your third year.
3. In a laddered program, CED 280A is only required to be taken one time.
4. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
5. Delta College reserves the right to modify program requirements.
6. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Delta  
Faculty

the Delta  
Difference

"The personal attention I can give each and every one of my students, and the sense of community in each classroom can only be found here."

Earl Gregory, Saginaw



# CRIMINAL JUSTICE

Career Pathway ♦ Human Services

## OPTIONS: CORRECTIONS LAW ENFORCEMENT LAW ENFORCEMENT WITH BASIC POLICE TRAINING (B.P.T.)

### Associate in Applied Arts Degree/ Certificate of Achievement

The Delta College Criminal Justice program is designed to give you specialized knowledge of law enforcement combined with a broad general educational background. The program offers theoretical, practical, and technical instruction designed to meet an ever-increasing demand and continuous upgrading of personnel by law enforcement agencies. As a graduate of this program, you would be prepared to seek employment in many non-officer (civilian) jobs such as: patrol and security guards, investigator for several government affiliated agencies or private investigation, and corrections.

	Sem	Hrs
General Education Core Courses		
1 CST 132 Computer Literacy on the Macintosh OR		
CST 133 Intro to Computer Information Technology .....	3/4	
* CJ 110 Introduction to Criminal Justice .....	3	
ENG --- Any Approved College Composition I Course .....	3/5	
ENG --- Any Approved College Composition II Course OR		
ENG 113 Technical Communication .....	3/5	
2 LW 101 Physical Fitness OR		
2 LW 111 Circuit Training .....	1	
2 LW 220 Lifelong Wellness .....	1	
POL --- Any Approved American Government Requirement .	3/4	
PSY 211 General Psychology .....	4	
SOC 211 Principles of Sociology .....	3	
SOC 215 Sociology of Minority Groups .....	3	
SPH 112 Fundamentals of Oral Communication OR		
SPH 114 Interpersonal Communications .....	3	
SUBTOTAL		30/36
Corrections Option (See Notation 3)		
>*CJ 130 Introduction to Corrections .....	3	
>*CJ 132 Client Relations in Corrections .....	3	
>*CJ 135 Correctional Institutions & Facilities .....	3	
>*CJ 233 Client Growth & Development .....	3	
*CJ 236 Community Based Corrections OR		
*CJ 275 Probation and Parole .....	3	
*CJ 237 Jails and Local Detention .....	3	
>*CJ 238 Legal Issues in Corrections .....	3	
PSY 241 Abnormal Psychology OR		
CJ 250 Juvenile Offender .....	3	
--- --- General Electives .....	2/8	
SUBTOTAL		26/32
Law Enforcement Option (See Notation 3)		
BIO 101 Introduction to Anatomy and Physiology OR		
BIO 111 Principles of Biology .....	4	
* CJ 111 Police Administration .....	3	
* CJ 112 Police Operations .....	3	
* CJ 210 Introduction to Criminal Investigation .....	3	
4*CJ 220 Crime Laboratory Techniques .....	3	
* CJ 250 Juvenile Offender .....	3	
* CJ 270 Evidence & Criminal Procedures .....	3	
* CJ 271 Criminal Law .....	3	
7 --- --- General Electives .....	1/7	
SUBTOTAL		26/32

Law Enforcement with Basic Police Training (B.P.T.) Option (See Notation 5)

BIO 101 Introduction to Anatomy and Physiology OR	
BIO 111 Principles of Biology .....	4
* CJ 111 Police Administration .....	3
* CJ 112 Police Operations .....	3
* CJ 210 Introduction to Criminal Investigation .....	3
4*CJ 220 Crime Laboratory Techniques .....	3
* CJ 250 Juvenile Offender .....	3
* CJ 270 Evidence & Criminal Procedures .....	3
* CJ 271 Criminal Law .....	3
6**CJ 101 Police Recruit Training .....	6
6**OAT 153 Police Report Writing .....	1
6**LW 280 Self-Defense/Fitness .....	2
6**LWT175 Advanced First Aid/EM Care .....	3

SUBTOTAL 37

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/71

TOTAL CREDITS REQUIRED FOR CORRECTIONS CERTIFICATE 15

> **CERTIFICATE OPTION:** A Certificate will be awarded if you successfully complete these courses.

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- \*\* Grade requirement varies. Contact the Criminal Justice Training Center.

1. If you can demonstrate proficiency in these areas, you can substitute additional electives unless total is 62 credits.
2. Not required if taking Law Enforcement Basic Police Training (B.P.T.) Option.
3. This Criminal Justice Program does not certify you for employment as a police enforcement officer as it does not incorporate the Basic Police Training (B.P.T.) program.
4. You may substitute a lab science other than Biology for CJ 220. This would be particularly useful for transferring to a 4-year school and helpful in the fulfillment of the MACRAO agreement.
5. The Basic Police Training (B.P.T.) can be taken **only** after all of the other courses included for the degree have been successfully completed.
6. CJ 101, OAT 153, LW 280, LWT 175 are taken concurrently and together make up the Basic Police Training (B.P.T.) Academy. (12 credits). For information about B.P.T. contact the Criminal Justice Training Office. LW 280 fulfills the LW requirement for the Associate Degree.
7. MACRAO Agreement: It is recommended that if you are planning to transfer to a four-year college or university, you complete the MACRAO agreement requirements. The intent of this agreement is to ensure that students who complete the basic two-year requirements (general education requirements) at a signatory public community college will have satisfied the basic two-year requirements of the signatory four-year college. These basic two-year requirements include College Composition I and II and 8 credits each in humanities, social science and natural science. For assistance in program planning to incorporate the MACRAO designation on your transcript, you are advised to contact a Delta College counselor/advisor.
8. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
9. Delta College reserves the right to modify program requirements.
10. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

## Associate in Applied Science Degree/ Advanced Certificate

As a graduate of this program, you will be prepared to assist the dentist with treatment procedures at chairside; produce diagnostic aids for interpretation by the dentist; provide oral health instructions for patients; perform laboratory procedures that are required for dental treatment; and perform basic office and record procedures. Upon successfully completing this program, you are eligible to take the certification exam of the American Dental Assistants Association to become a Certified Dental Assistant (CDA) and the Michigan Department of Consumer and Industry Service exam to become a Registered Dental Assistant (RDA). This Delta College program is accredited by the Commission on Dental Accreditation, a specialized accrediting body recognized by the Council on Post-secondary Accreditation and the U.S. Department of Education.

	Sem	Hrs
General Education Courses		
ENG --- Any Approved College Composition I Course AND ....	3/5	
ENG --- Any Approved College Composition II Course .....	3/5	
OR		
OAT 151 Business Communication I AND .....	(3)	
OAT 152 Business Communication II .....	(3)	
LW 220 Lifelong Wellness .....	1	
LW --- Any Approved Lifelong Wellness Requirement .....	1	
POL --- Any Approved American Government Requirement .	3/4	
PSY 101 Applied Psychology OR		
PSY 211 General Psychology .....	3/4	
SPH 114 Interpersonal Communications .....	3	
<b>SUBTOTAL</b>	<b>17/23</b>	

Basic Program Requirements: These courses must be taken in the sequence specified.

### FALL SEMESTER ONLY

> *BIO 102 Microbiology & Infection Control .....	2
> *DA 110 Preclinical Dental Assisting .....	5
> *DA 113 Oral Anatomy & Physiology .....	4
> *DA 114 Dental Materials I (7-1/2 weeks) .....	1
> *DA 117 Dental Health & Nutrition .....	1
> *HSC 140 Basic Medical Emergencies .....	2
<b>SUBTOTAL</b>	<b>15</b>

### WINTER SEMESTER ONLY

> *BIO 101 Anatomy & Physiology .....	4
> *DA 120 Clinical Dental Assisting .....	6
> *DA 123 Dental Radiology .....	2
> *DA 123LDental Radiology Lab .....	2
> *DA 125 Dental Materials II .....	2
<b>SUBTOTAL</b>	<b>16</b>

### SPRING SESSION ONLY

> *DA 128 Expanded Dental Functions .....	3
> *DA 129 Dental Office Management .....	3
<b>SUBTOTAL</b>	<b>6</b>

### SPRING SEMESTER ONLY

> *DA 130 Dental Assisting Internship .....	7
> *DA 133 Dental Assisting Internship Seminar .....	1
<b>SUBTOTAL</b>	<b>8</b>
<b>TOTAL</b>	<b>45</b>

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/68  
TOTAL CREDITS REQUIRED FOR CERTIFICATE 45

> **CERTIFICATE OPTION** - A Certificate will be awarded when you successfully complete courses preceded by a greater than sign ">".

### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. Due to the limited capacity of the college dental facilities and the specific requirements of the Commission on Accreditation of Dental and Dental Auxiliary Educational Programs, enrollment is limited. You may complete courses BIO 101, BIO 102, and HSC 140 with a minimum C (2.0) grade in each prior to enrollment in the Dental Assisting Sequential courses.
- 2. Dental Assisting courses are offered day hours **only** and **must be taken together** in the sequence shown.
- 3. If you successfully complete ("C"/2.0 grade in both) BIO 152 and 153 prior to enrollment in DA courses, you will be able to waive BIO 101.
- 4. Once admitted to the DA course sequence, you will be required to have a negative TB test during your first semester and then be required to have a physical exam including a negative Hepatitis Carrier B test prior to enrolling in DA 120 or DA 123L (second semester of the Dental Assisting sequential courses). A Hepatitis B vaccination is strongly recommended by the faculty and by the Commission on Dental Accreditation.
- 5. In addition to tuition and textbook costs, you must purchase laboratory attire and other infectious disease barriers. You must provide your own transportation to dental office facilities and internship office assignments.
- 6. You must have valid CPR Certification throughout the third semester of the Dental Assisting Sequential courses and are required to take the Certification Exam and Registered Dental Assistant Exam.
- 7. You must achieve a "C" (2.0) or better grade in each DA course to be eligible to continue enrollment in this program.
- 8. Validation is **not** required for **this** Health program.
- 9. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 10. Delta College reserves the right to modify program requirements.
- 11. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

**Also see "Dual Degrees"**



## Advanced Certificate

For an Associate Degree, see Dental Assisting Associate in Applied Science Degree/Advanced Certificate general education requirements, and talk with a health cluster counselor or advisor in Counseling.

- A "C" (2.0) minimum grade is required in each asterisked course.
1. You will be required to have a negative TB test, physical exam and a negative Hepatitis B Carrier test. A Hepatitis B vaccination is strongly recommended.
2. You must have a valid CPR Certification throughout the Dental Assisting courses.
3. Some infection control protective barriers must be purchased. You must supply your own transportation to clinical/dental office facilities.
4. Validation is not required for this health program.
5. You may be granted 30 credits for a current CDA Certification in the State of Michigan accepted as State-certified training applicable to the Health Care Services (CDA) occupational curricula at Delta College as approved by the Delta College Health and Wellness Division Chair.
6. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
7. Delta College reserves the right to modify program requirements.

	Sem Hrs
Basic Program Requirements	
5 Certified Dental Assistant (CDA) Experience .....	30
SUBTOTAL	30
Clinical Course Work	
* SPH 114 Interpersonal Communications OR	
* PSY 101 Applied Psychology .....	3
* LW 220 Lifelong Wellness .....	1
* DA 119 CDA Practical .....	8
* DA 128 Expanded Dental Functions .....	3
SUBTOTAL	15
TOTAL CREDITS REQUIRED FOR CERTIFICATE	45



## Associate in Applied Science Degree

As a graduate of this program, you will have the knowledge and skills to provide preventive and therapeutic treatments and services prescribed by and under the supervision of the dentist. Specific responsibilities vary, depending on the law of the state where you are employed, but generally include: scaling and root debridement; application of topical fluoride and medicines for the prevention of tooth decay; taking impressions and preparing diagnostic models; expose, process and mount dental radiographs; provide instructions for patient self-care and nutritional counseling; and perform laboratory procedures. Upon successfully completing this program, you will be eligible to take the National, Regional and State Board Examinations for Dental Hygiene licensure, since Delta College's program is accredited by the Commission on Dental Accreditation of the American Dental Association, a specialized accrediting body recognized by the Council on Postsecondary Accreditation and the U.S. Department of Education. This is a suggested enrollment sequence for full time students. It is suggested that part time students see an advisor for scheduling assistance.

	Sem Hrs
<b>General Education Courses</b>	
1 *BIO 140 Essentials of Human Anatomy and Physiology OR ...	5
1 *BIO 152 Anatomy and Physiology I AND .....	4
1 *BIO 153 Anatomy and Physiology II .....	4
OR	
1 *BIO 240 Human Anatomy AND .....	(4)
1 *BIO 241 Physiology .....	(4)
*BIO 203 General Microbiology .....	4
*DH 100 Dental Hygiene Profession .....	1
*DH 101 Dental Anatomy OR	
+DA 113 Oral Anatomy and Physiology .....	2
# ENG --- Any Approved College Composition I Course .....	3/5
# ENG --- Any Approved College Composition II Course .....	3/5
# POL --- Any Approved American Government Requirement .	3/4
# PSY 101 Applied Psychology OR	
# PSY 211 General Psychology .....	3/4
# SOC 211 Principles of Sociology .....	3
# SPH 112 Fundamentals or Oral Communications OR	
# SPH 114 Interpersonal Communications .....	3
<b>SUBTOTAL</b>	<b>38/41</b>

Prior to attempting to register to begin the clinical sequence, you must complete the "Validation Application for Health Clinical Programs" and be officially validated. See page 28 of this catalog for the required procedures.

### Clinical Course Sequence

<b>First Semester (Fall)</b>	
*DH 110 Dental Infection Control .....	2
*DH 111 Oral Examinations .....	1
*DH 112 Medical Assessment/Emergencies .....	2
*DH 114 Oral Health .....	2
*DH 115 Clinical Techniques .....	5
*DH 116 Preventive Nutrition .....	3
*DH 118 Head and Neck Anatomy .....	3
<b>SUBTOTAL</b>	<b>18</b>

### Second Semester (Winter)

*DH 120 Periodontics I .....	3
*DH 121 Dental Hygiene Seminar I .....	2
*DH 122 Oral Histology and Embryology .....	3
*DH 123 Dental Radiography .....	2
*DH 123L Dental Radiography Lab OR	
+DA 123L Dental Radiology Lab .....	1
*DH 125 Clinical Dental Hygiene I .....	4
*LW 206A Occupational Wellness 1 .....	1
<b>SUBTOTAL</b>	<b>16</b>

<b>Third Semester (Spring Session)</b>	
*DH 124 Pharmacology .....	2
*DH 131 Dental Hygiene Seminar II .....	1
*DH 135 Clinical Dental Hygiene II .....	3
*LW 206B Occupational Wellness 2 .....	5
<b>SUBTOTAL</b>	<b>6.5</b>

<b>Fourth Semester (Fall)</b>	
*DH 210 Periodontics II .....	2
*DH 213 Oral Pathology .....	3
*DH 214 Dental Materials .....	4
*DH 215 Clinical Dental Hygiene III .....	6
*DH 216 Community Dentistry I .....	2
*LW 206C Occupational Wellness 3 .....	5
<b>SUBTOTAL</b>	<b>17.5</b>

<b>Fifth Semester (Winter)</b>	
*DH 220 Introduction to Orthodontics .....	2
*DH 222 Case Study Documentation .....	1
*DH 225 Clinical Dental Hygiene IV .....	6
*DH 227 Community Dentistry II .....	1
*DH 228 Dental Hygiene Seminar III .....	1
<b>SUBTOTAL</b>	<b>11</b>

**TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 102/108**

The following courses might improve your knowledge base for Dental Hygiene: HSC 105 and CHM 111.

### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- + Must have been taken in 1997 or later and passed with a "B" (3.0) minimum grade.
- # With a GPA of 2.0 over all
- 1. It is highly recommended that you make an appointment with the Health and Wellness Counselor to go over the prerequisites and discuss your career choice prior to starting your prerequisites.
- 2. A maximum of 18 students will be accepted each Fall Semester for the Dental Hygiene courses.
- 3. Prerequisite qualifications are: a) high school graduate or GED equivalent; b) be admitted to Delta College; c) submit to Delta College complete transcripts from high school and other colleges attended; d) successfully complete prerequisite courses; e) follow the validation procedures as outlined on page 28 of this catalog once the prerequisites are completed.
- 4. Dental Hygiene courses are offered day hours only and must be taken together in the sequence shown. You must achieve a minimum C (2.0) grade in each Dental Hygiene course to be eligible to continue in the program.
- 5. After enrolling in clinical, you must have a complete physical examination, including TB and Hepatitis carrier tests. It is highly recommended that you talk to your family physician about receiving the Hepatitis Vaccine before you start the professional course sequence of Dental Hygiene.
- 6. You must maintain a current CPR certification throughout your enrollment in the Dental Hygiene courses, plus you must maintain your certification to be a licensed Dental Hygienist in the State of Michigan.
- 7. In addition to tuition, fees and textbook costs, you must purchase laboratory coats, clinic shoes, uniform pants, safety glasses, and the Dental Hygiene Instrument Kit (additional costs approximately \$1,500).
- 8. Student reentry procedures are printed in the handbook given to all clinical students.
- 9. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 10. Delta College reserves the right to modify program requirements.
- 11. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Also see "Dual Degrees"



## DUAL DEGREES

Career Pathway + Business, Management,  
Marketing and Technology

### OPTIONS:

AUTOMOTIVE SERVICE TECHNOLOGY  
DENTAL ASSISTING/GENERAL MANAGEMENT  
DENTAL HYGIENE/GENERAL MANAGEMENT  
HEALTH CARE SERVICES/PARAMEDIC  
NURSING/GENERAL MANAGEMENT  
PHYSICAL THERAPIST ASSISTANT/GENERAL  
MANAGEMENT  
RADIOGRAPHY/GENERAL MANAGEMENT  
RESPIRATORY CARE/GENERAL MANAGEMENT  
SURGICAL TECHNOLOGY/GENERAL MANAGEMENT

### Associate in Applied Science Degree

AND

### Associate in Business Studies Degree

Dual Associate degrees are available in several health curricula and the Automotive Service Technology curricula with the General Management Program. Generally, the requirements are completed simultaneously; however, the business courses normally will be completed prior to beginning your clinical sequence. Your diploma will list both the Associate in Applied Science Degree and the Associate in Business Studies Degree.

In addition to completing all the courses for an approved applied science program (see above), you must complete a minimum of 24 additional credits from the courses listed below.

If you have no prior college degree you will have to earn a **minimum** of 86 credits to earn a Dual Degree (62 for the Health Degree, 64 for the Automotive Service Technology Degree, and 24 for the Business Degree).

If you have earned a degree previously you may not use courses from that degree to satisfy the requirements of a "Dual Degree". It is possible that your previous degree may have included one or more of the required business courses (MGT 153, 245). You do not have to retake such classes, but must replace them from the list of approved business courses under the dual degree to complete an additional 24 credits for the Dual Degree.

	Sem	Hrs
Business Courses		
MGT 153 Introduction to Business .....	3	
* MGT 245 Principles of Management .....	3	

The other 18 credits are to be selected from the following courses:

1 ACC 111 Introductory Accounting .....	4
1 ACC 211 Principles of Accounting I .....	4
ACC 212 Principles of Accounting II .....	4
CST 133 Introduction to Computer Information Technology OR	
CST 134 Micro Computers in Business Using MS Office .....	3/4
CST 204 Microsoft Word: Intermediate .....	2
ECN 221 Principles of Economics I .....	4
MGT 110 Business Math .....	3
MGT 243 Principles of Marketing .....	3
MGT 246 Supervision .....	3
MGT 251 Business Law .....	3
MGT 256 Human Resource Management I .....	3
OAT 151 Business Communication I .....	3
OAT 152 Business Communication II .....	3
OAT 170 Keyboarding OR	
CST 104 Microsoft Word Foundations .....	2/1
OAT --- Software course of your choice .....	varies
SUBTOTAL 24/25	

CREDITS REQUIRED FOR A DUAL DEGREE VARY  
ACCORDING TO THE CHOSEN CURRICULA

### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. Credit may only be earned in either ACC 111 or 211.
- 2. Student Re-entry procedures are printed in the handbook given to all clinical students.
- 3. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 4. Delta College reserves the right to modify program requirements.
- 5. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

## Associate in Applied Science Degree

Delta College owns and operates public television stations WDCQ-TV Channel 19 and WDCP-TV Channel 35, both affiliated with national and regional educational networks. Delta College also operates, in conjunction with Central Michigan University, public radio station WUCX-FM 90.1, affiliated with national public radio program networks. In addition to these broadcast facilities, Delta College operates a student television production studio and an audio production studio for both broadcast and student use. These Delta broadcasting facilities provide you with practical experience under laboratory and real time operating conditions. You will utilize audio/video acquisition, editing, and recording equipment and become involved in production activities; be exposed to program producing, directing, and performance. The Electronic Media Broadcasting Radio TV program prepares you for the fundamental information and experience necessary for entry level positions in communication and information industries.

Discussion regarding the best order for you to schedule the courses should be made with a Delta Electronic Media BRT counselor. Check course descriptions for prerequisite courses. You must complete all required courses in this program.

	Sem	Hrs
General Education Courses		
ENG --- Any Approved College Composition I Course .....	3/5	
ENG --- Any Approved College Composition II Course .....	3/5	
OR		
OAT 151 Business Communication I .....	(3)	
OAT 152 Business Communication II .....	(3)	
ENG 115 Mass Media .....	3	
ECN 221 Principles of Economics I .....	4	
POL --- Any Approved American Government Requirement .....	3/4	
SPH 112 Fundamentals of Oral Communication .....	3	
LW 220 Lifelong Wellness .....	1	
LW --- Any Approved Lifelong Wellness Requirement .....	1	
<b>SUBTOTAL</b>	<b>21/26</b>	

Basic Program Requirements		
CST 103 Windows Foundations .....	1	
CST 106 Internet Foundations .....	1	
CST 110 Web Page Design .....	1	
BRT 140 Electronic Media History .....	3	
BRT 151 Media Production I .....	4	
BRT 153 Broadcast Performance .....	3	
PHO 100 Elements of Color Photography OR		
ART 115 Two Dimensional Basic Design .....	3	
BRT 155 Media Production II .....	4	
ART 271 Digital Imaging: Photoshop .....	3	
BRT 227 Broadcast Sales .....	3	
BRT 255 Media Production III .....	4	
PHL 205 Media Ethics and Law .....	3	
EM 285 Electronic Media Capstone .....	4	
# --- General Electives .....	0/4	
<b>SUBTOTAL</b>	<b>37/41</b>	

# General Electives		
BRT 233 Radio News and Programming .....	3	
BRT 253 Advanced Broadcast Performance .....	3	
BRT 260A Broadcast Practicum .....	2	
BRT 260B Broadcast Practicum .....	2	
BRT 281 Internship .....	1	
BRT 282 Internship .....	2	
BRT 283 Internship .....	3	
ART 115 Two Dimensional Basic Design .....	3	
ENG 116 News Writing .....	3	
ART 111 Drawing I .....	3	
ART 255 Art of the 20th Century .....	3	
ART 271B Photoshop II .....	3	

ART 276 QuarkXPress .....	3
ART 277 Illustrator .....	3
MUS 111 Music Appreciation .....	3
SPH 202 Oral Communication for Managers .....	3
SPH 224 Non-Verbal Communication .....	3
PHO 100 Elements of Color Photography .....	3
PHO 101 Photography I .....	3
PHO 102 Photography II .....	3
ART 116 Three Dimensional Design .....	3
ART 279 Web Page Design Arts .....	3
ART 283 Macromedia Director .....	6

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62

### NOTATIONS:

1. Based on available facilities and equipment, this program is considered a "limited" enrollment program. Classes will be small and interaction with faculty will provide comprehensive instruction.
2. If you are PLANNING TO TRANSFER, please work closely with the Program Counselor.
3. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
4. Delta College reserves the right to modify program requirements.
5. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Delta  
Faculty



"Teaching is a two-way street. I can also learn from my students. I conduct very few formal lectures. I try and do more interactive things because students need to be active participants. I strongly believe there is always something to learn. I'm not an expert in everything. With all the new developments in medicine and technology, I don't hesitate to say I don't know, but together we'll certainly find the answer."

*Paula Cornell, Saginaw*



## ELECTRONIC MEDIA/GRAPHIC DESIGN

Career Pathway ♦ Arts and Communications

### Associate in Applied Arts Degree

Graphic Design concentrates on helping you develop creative thinking processes, solutions to specific design problems, and aesthetic awareness. It will give you the technical knowledge and skills demanded of today's artist/designer for output of printed and digital communications. As a Graphic Designer, you will plan, design and draw illustrations for all types of advertisements, displays, television commercials, books, magazine articles and advertisements, posters, calendars, and hundreds of other items. You will also create movie and television cartoons, be involved in fashion illustration, greeting card illustration, industrial design, multi-media, software design, web page design and many other kinds of art work.

	Sem Hrs
<b>General Education Courses</b>	
ENG --- Any Approved College Composition I Course AND ....	3/5
ENG --- Any Approved College Composition II Course .....	3/5
OR	
OAT 151 Business Communications I AND .....	(3)
OAT 152 Business Communications II .....	(3)
ENG 115 Mass Media .....	3
ECN 221 Principles of Economics I .....	4
POL --- Any Approved American Government Requirement .....	3/4
SPH 112 Fundamentals of Oral Communication .....	3
LW 220 Lifelong Wellness .....	1
LW --- Any Approved Lifelong Wellness Requirement .....	1
<b>SUBTOTAL</b>	<b>21/26</b>

<b>Program Requirements</b>	
ART 111 Drawing I .....	3
ART 115 Basic Design 2D .....	3
ART 152 Art History & Appreciation II OR	
ART 255 Art of the 20th Century .....	3
ART 271 Digital Imaging: Photoshop I .....	3
ART 271B Digital Imaging: Photoshop II .....	3
ART 276 QuarkXPress .....	3
ART 277 Illustrator .....	3
ART 278 Electronic Pre-Press .....	3
ART 279 Web Page Design Arts .....	3
ART 283 Macromedia Director .....	3
ART 284 Typography .....	3
ART 285 Macromedia's Flash .....	3
PHL 205 Media Ethics and Law .....	3
EM 285 Electronic Media Capstone .....	4
<b>SUBTOTAL</b>	<b>43</b>

TOTAL CREDITS REQUIRED ASSOCIATE DEGREE 64/69

#### NOTATIONS:

1. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
2. Delta College reserves the right to modify program requirements.
3. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

## BASIC EMERGENCY MEDICAL TECHNICIAN

Career Pathway ♦ Health Science

### Certificate of Achievement

Basic Emergency Medical Technicians provide basic emergency, pre-hospital care to patients involved in accidents, injuries, or sudden illness. Places of employment include fire and police departments, rescue operations, ambulance services, hospitals, and industrial sites. Successful completion (minimum "C" 2.0 grade) of the EMT program will result in eligibility to write the State of Michigan Basic EMT examination.

	Sem Hrs
<b>Required Prerequisite</b>	
* HSC 105 Medical Terminology .....	2
<b>Basic Program Requirements</b>	
+ EMS 110 Basic Emergency Medical Technician 1 .....	4
+ EMS 111 Basic Emergency Medical Technician 2 .....	4
+ EMS 113 Basic EMT Field Experience .....	1
+ EMS 112 Basic Emergency Medical Technician 3 .....	3
<b>TOTAL CREDITS REQUIRED FOR CERTIFICATE</b>	<b>14</b>

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
  - + A "B" (3.0) minimum grade is required for all courses with a plus sign.
1. HSC 105 must be completed before beginning the EMS sequence.
  2. Current CPR certification (for the Professional Rescuer) must be maintained throughout enrollment in the Basic EMS program. Photocopy of current CPR card must be turned in to instructor at first class meeting.
  3. Upon enrollment in the Basic EMS sequence, you must have had a physical within the last year, and the Delta College Health appraisal form (available in the Health and Wellness Division office, N-160) must be completed by their physician. You must also provide proof of a negative TB test. Physical examination must confirm that you are free from communicable disease.
  4. Prior to Field Experience, you must provide proof of Hepatitis B vaccine immunization OR submit a signed waiver form (available from the Health and Wellness secretary, N-160).
  5. You must receive a "B" grade in each course to be allowed to continue in the next sequential course.
  6. EMS 110 is taken the first seven and a half (7 1/2) weeks of the semester. EMS 111 is taken the second seven and a half (7 1/2) weeks of the semester. EMS 112 is taken the next semester after completing EMS 110 and EMS 111. EMS 113 is taken beginning halfway through the first semester and throughout the second semester.
  7. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
  8. Delta College reserves the right to modify program requirements.

Also see Fire Science Program, EMS Option

# ENVIRONMENTAL TECHNOLOGY

Career Pathway ♦ Natural Resources  
and Agriscience

## Associate in Applied Science Degree/ Advanced Certificate

Successful completion of the program will prepare you for employment as a hazardous materials technician, safety technician, solid waste technician, recycling technician, or as a team member in environmental consulting firms. Skills and knowledge that you should possess as a result of completing the program include: understanding of the specific safety and environmental regulations related to the work environment; familiarity with computers; basic understanding of chemical terminology; ability to read technical materials and translate what is read into action; ability to write comprehensible reports; ability to keep records; ability to make routine mathematical computations; understanding of how environmental regulations are formulated, and; understanding of the interrelated nature of environmental problems.

	Sem	Hrs
General Education Courses		
> ENG --- Any Approved College Composition I Course .....	3/5	
> ENG 113 Technical Communications .....	3	
GLG 130 Environmental Geology (recommended) OR		
GLG 111 Physical Geology .....	4	
LW 220 Lifelong Wellness .....	1	
LW --- Any Approved Lifelong Wellness Requirement .....	1	
3,4MTH 119 Intermediate Algebra OR MTH 119A .....	4	
MTH 208 Elementary Statistics .....	3	
POL --- Any Approved American Government Requirement .....	3/4	
SPH 112 Fundamentals of Oral Communication OR		
SPH 114 Interpersonal Communications .....	3	
2 --- --- Electives .....	3	
SUBTOTAL		28/33

Basic Program Requirements		
> BIO 110 Environmental Science .....	4	
3>CHM 105 Technical Chemistry I .....	5	
3>CHM 106 Technical Chemistry II .....	5	
CHM 230 Chemical Analysis/Instrumentation .....	4	
> CST 132 Computer Literacy on the Macintosh OR		
> CST 133 Introduction to Computer Information Technology ..	3/4	
> ENV 100 Environmental Regulations .....	3	
> ENV 130 Environmental Management: Pollution Prevention ....	1	
1>ENV 151 HAZWOPER Training .....	2.7	
1>ENV 152 Emergency Response to Industrial Spills .....	1.6	
1>ENV 153 Confined Space Training .....	1.3	
1>ENV 154 Hazardous Materials Shipping and Handling .....	0.4	
> PHY 101 Applied Physics .....	4	
SUBTOTAL		35/36

Options/Suggested Electives/Recommended Electives		
BIO 102 Microbiology and Infection Control .....	2	
BIO 116 Winter Ecology .....	2	
BIO 119 Stream Ecology .....	2	
BIO 123 Plant Communities .....	2	
BIO 203 Microbiology .....	4	
ENV 310 Environmental Site Assessment .....	3	
ENV 320 Environmental Management .....	3	

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 63/65

TOTAL CREDITS REQUIRED FOR CERTIFICATE 37/38

> **CERTIFICATE OPTION:** A certificate may be awarded when you successfully complete courses preceded by a greater than sign ">".

### NOTATIONS:

1. ENV 151, ENV 152, ENV 153, and ENV 154 are presented as a series of training modules offered through Delta College Corporate Services. All training components are those required and detailed through OSHA Hazardous Training or other State and Federal regulations. Upon presentation of verification of completion of each of these modules to the chairperson of the Science Division, the student will receive the indicated amount of academic credit.
2. Electives: If you are considering transferring to a university, review the Associate in Science degree requirements in the catalog and see a counselor since requirements of various transfer schools differ.
3. If you have high school background in chemistry and math or ASSET scores that meet this objective you should consider higher level chemistry and math courses. This is particularly important for students who may wish to transfer to a university to pursue a baccalaureate degree. Consult a counselor for appropriate courses and waiver.
4. Prior to enrollment, you must have the appropriate score on ASSET or Compass.
5. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
6. Delta College reserves the right to modify program requirements.
7. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Scholarship Students  
Experience

**the Delta  
Difference**

"Saying that I am grateful isn't a powerful enough word to express the tremendous thankfulness I have for people like you. Thank you very, very much."

Keith Duane Launstein



# FIRE SCIENCE TECHNOLOGY

## Career Pathway + Human Services

### OPTIONS:

**FIRE FIGHTER TECHNICIAN**  
**FIRE INVESTIGATION/PREVENTION**  
**FIRE SCIENCE TECHNOLOGY**  
**EMERGENCY MEDICAL TECHNICIAN (EMS)**  
**INDUSTRIAL/COMMERCIAL SECURITY & SAFETY**  
 (Career Pathway: Engineering/Manufacturing  
 and Industrial Technology)  
**LEADERSHIP AND TRAINING**

### Associate in Applied Science Degree

This Associate degree program in Fire Science Technology is designed to provide vocational and technical skills which will provide you with educational credentials for employment or promotional opportunities. Students graduating may enroll in the 3+1 BBA Fire Administration Degree Program. Students may choose two of the options, which will appear on their degree. Students wishing more could complete a second degree with minimum of 24 additional credits.

**Nature of Work:** Fire Science Technology is an applied science that embraces a wide range of knowledge leading to the control or prevention of fire and the handling of hazardous materials. This program is designed for the entering college student, the professional fire fighter, and persons employed in a broad range of occupations related to fire science and safety. Technical competency prepares you for managerial and leadership positions in municipal, industrial, or business entities.

**Fire Fighter Technician:** As a Fire Fighter, you will respond to emergency calls, control and extinguish fires, mitigate hazards, protect life and property, and maintain equipment. You will be responsible for proper use and maintenance of equipment, educating the public, responding to emergencies and developing pre-incident plans to protect the community against loss of life and property.

**Fire Investigation/Prevention:** As a Fire Safety Inspector, you will be involved in education, enforcement, engineering, and fire investigation. Your work will involve fire safety education, inspecting and enforcing fire codes, plan review, testing of fire protection systems, maintaining exitways, inspecting flammable liquid storage, determining cause and origin of fires, preserving evidence, and testifying in court cases.

**Emergency Medical Technician (EMS):** As an Emergency Medical Technician, you will provide basic emergency prehospital care to patients involved in accidents, injuries, or sudden illness. Places of employment include fire and police departments, rescue operations, ambulance services, hospitals, and industrial sites.

**Industrial/Commercial Security and Safety:** You will perform inspections of industrial and commercial buildings to detect fire and safety hazards, and make recommendations for improvements for loss prevention management. Your duties will include examining interiors and exteriors of industrial settings for violation of federal, state, and local requirements.

**Leadership & Training:** You will provide the command and educational functions for public or private entities. Responsibilities include all major functions at emergency scenes, training of personnel, safety and overall management of resources.

	Sem	Hrs
General Education Core Courses		
ENG --- Any Approved College Composition I Course .....	3/5	
ENG --- Any Approved College Composition II Course OR		
ENG 113 Technical Communications .....	3/5	
LW 220 Lifelong Wellness .....	1	
1 LW --- Any Approved Lifelong Wellness Requirement .....	1	
POL --- Any Approved American Government Requirement .....	3/4	
PSY 101 Applied Psychology OR		
SPH 114 Interpersonal Communications OR		
SPH 112 Fundamentals of Oral Communication .....	3	
SUBTOTAL		14/19

	Sem	Hrs
Fire Science Core Courses		
* FST 101 Introduction to Fire Science .....	3	
* FST 102 Fireground Tactics .....	3	
* FST 103 Building Materials and Construction .....	3	
3* FST 104 Arson Awareness OR		
* FST 230 Fire Safety Education .....	3	
* FST 105 Hazardous Materials I .....	3	
* FST 107 Fire Protection Systems I .....	3	
* CST 133 Introduction to Computer Information Technology OR		
* FST 133 Computer Aided Management Emergency Operations .....	3/4	
SUBTOTAL		21/22

I. Fire Fighter Technician Option		
* FST 111 Fire Fighter IA .....	6	
* FST 112 Fire Fighter IB .....	6	
* FST 211 Fire Fighter II .....	4	
* FST 301 Incident Command System .....	1	
--- --- General Electives .....	4	
4 --- --- Approved Electives .....	6	
SUBTOTAL		27

II. Fire Investigation/Prevention Option		
* CJ 210 Introduction to Criminal Investigation OR		
* FST 224 Fire Investigations .....	3	
* FST 205 Hazardous Materials II .....	3	
* FST 206 Confined Space Management OR		
* FST 207 Fire Protection Systems II .....	3/4	
3* FST 104 Arson Awareness OR		
* FST 230 Fire Safety Education .....	3	
* FST 231 Fire Service Law .....	3	
--- --- General Electives .....	5/6	
4 --- --- Approved Electives .....	6	
SUBTOTAL		26/28

III. Fire Science Technology Option		
4 --- --- Approved Electives .....	18	
--- --- General Electives .....	9	
SUBTOTAL		27

IV. Emergency Medical Technician (EMS) Option		
2* EMS 110 Basic Emergency Medical Technician 1 .....	4	
2* EMS 111 Basic Emergency Medical Technician 2 .....	4	
2* EMS 112 Basic Emergency Medical Technician 3 .....	3	
2* EMS 113 Basic EMS Field Experience .....	1	
* FST 301 Incident Command System .....	1	
4 --- --- Approved Electives .....	6	
--- --- General Electives .....	8	
SUBTOTAL		27

V. Industrial/Commercial Security and Safety Option		
* CJ 182 Introduction to Security .....	3	
* FST 205 Hazardous Materials II .....	3	
* FST 206 Confined Space Management OR		
* FST 207 Fire Protection Systems II .....	3/4	
* FST 231 Fire Service Law .....	3	
* IS 118 Industrial Safety .....	2	
--- --- General Electives .....	6/7	
4 --- --- Approved Electives .....	6	
SUBTOTAL		26/28

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CONTINUED

	Sem Hrs
VI. Leadership & Training Option	
* IS 110 Industrial Supervision OR	
* FST 203 Fireground Management .....	3
* FST 202 Company Officer I OR	
* FST 206 Confined Space Management .....	4/5
* FST 204 Fire Science Instructional Methodology .....	3
* FST 231 Fire Service Law .....	3
* FST 104 Arson Awareness OR	
* FST 230 Fire Safety Education OR	
* FST 208 Company Officer II .....	3
--- General Electives .....	5/6
4 --- Approved Electives .....	6
<b>SUBTOTAL</b>	<b>27/29</b>

Approved Electives (see Notation 4)

* CJ 137 Current Issues in Security .....	3
* FST 114 Firefighter Safety & Survival .....	0.8
* FST 115 Managing Company Tactical Operations: Preparing (MCTO:P) .....	0.8
* FST 116 Building Construction Principles .....	0.8
* FST 117 Managing Company Tactical Operations: Decision Making (MCTO:D) .....	0.8
* FST 118 Records and Reports .....	0.4
* FST 120 Fire Service Educational Methodology .....	1
* FST 213 Managing Company Tactical Operations: Tactics (MCTO:T) .....	0.8
* FST 214 Arson Detection for the First Responder .....	0.8
* FST 215 Introduction to Fire Inspection Principles and Practices (IFIPP) .....	2
* FST 216 Building Construction Non-combustible/Fire Resistive .....	0.8
* FST 217 Fire Service Supervision: Personal Effectiveness .....	0.8
* FST 218 Fire Service Supervision: Team Effectiveness .....	0.8
* FST 240 Internship in Fire Science .....	2
* FST 300 Fire Officer III .....	3
* FST 301 Incident Command System .....	1
* FST 302 Leadership I Strategies for Company Success .....	1
* FST 303 Leadership II Strategies for Personal Success .....	1
* FST 304 Leadership III Strategies for Supervisory Success .....	1
* FST 305 Firefighter Health and Safety: Program Implementation & Management .....	1
* FST 306 Shaping the Future .....	1
* FST 307 Incident Safety Officer .....	1
* FST 308 Health and Safety Officer .....	1
* FST 332 Advanced Fire Administration .....	3
* FST 334 Fire Prevention Organization/Management .....	4
* FST 338 Contemporary Issues in Fire Service .....	3
* MGT 243 Principles of Marketing .....	3
* MGT 265 International Business .....	3
* IS 104 Construction Foreman Training .....	3
* IS 120 Supervisor/Employee Relations .....	3
* PHL 203 Business Ethics .....	3
* QA 191 Quality Teamwork .....	1
* SPH 202 Oral Communications for Managers .....	3

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62

**NOTATIONS:**

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. Recommended Lifelong Wellness (LW) classes are LW 111, 172, 173, or 174.
- 2. Before being admitted to the Delta College Basic EMS sequence, you must provide evidence of completion of a recent physical exam. This exam confirms that you are free of communicable diseases, and capable of performing duties necessary for safe patient care. The minimum requirement to be licensed as a Michigan EMS is successful completion of the Delta College courses EMS 110, 111, 112, and 113 with "C" (2.0) minimum grades and the passing of the State of Michigan Basic EMS exam. Other students who are enrolled in the Fire Science Program and hold a current EMS license may receive credit by presenting a copy to Records and Registration.
- 3. The Fire Investigation/Prevention Option require both FST 104 and FST 230. Whichever of these two courses you do not take with the Core Courses needs to be taken with the option courses.
- 4. Approved Fire Science Technology (FST) electives can be any combination of required (non-elective) courses in the other options and those listed as approved electives.
- 5. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 6. Delta College reserves the right to modify program requirements.
- 7. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Scholarship Students  
Experience



"My scholarship will be a tremendous help in paying for this semester at Delta. I am very happy and I just wanted to say how thankful I am. You made a difference!"

Christianna Stone



## HEALTH FITNESS EDUCATION AND PROMOTION

Career Pathway ♦ Human Services

### Associate in Applied Science Degree

This program will provide the health fitness promotion professional with the knowledge and experience to become an exercise leader or an administrative leader of health fitness programs in corporate, clinical, commercial, or community settings. Includes knowledge, application, and promotion of program administration, fitness program development for all apparently healthy individuals as well as those with controlled diseases, applied exercise physiology fitness assessment, staff training, and health related issues.

	Sem Hrs
<b>General Education Courses</b>	
* ENG --- Any Approved College Composition I Course .....	3/5
* ENG --- Any Approved College Composition II Course .....	3/5
* CHM 101 General Chemistry I .....	5
POL --- Any Approved American Government Requirement .....	3/4
* PSY 211 General Psychology .....	4
* SPH 112 Fundamentals of Oral Communication .....	3
* SPH 202 Oral Communications for Managers .....	3
*5 --- Any Approved Social Science Requirement (Group II) ..	2/3
*5 --- Any Approved Humanities Requirement (Group I) ..	2/3
<b>SUBTOTAL</b>	<b>28/35</b>

<b>Basic Program Requirements</b>	
* BIO 152 Anatomy and Physiology .....	4
* BIO 153 Anatomy and Physiology .....	4
* LW 101 Fitness for Life .....	1
* LW 220 Lifelong Wellness .....	1
* LWT 180 Responding to Emergencies .....	2
* LWT 210 Nutrition: The Science of Optimal Living .....	3
* LWT 230 Theory of Strength Training .....	2
* LWT 240 Health Fitness Instructor .....	4
* BIO 251 Exercise Physiology OR	
* LWT 251 Exercise Physiology .....	4
* LWT 255 Health Fitness Management and Promotion .....	3
*3 LWT 260 Health Fitness Experience .....	5
# LW --- Lifelong Wellness Electives Below .....	2
<b>SUBTOTAL</b>	<b>35</b>

# Lifelong Wellness Electives - Choose two of the following

- \* LW 110 Jogging
- \* LW 115 Tai Chi
- \* LW 131 Racquetball
- \* LW 151 Kick Boxing
- \* LW 152 Astanga Yoga
- \* LW 153 Dance Aerobics
- \* LW 154 NIA Neuromuscular Integrative Action
- \* LW 155 Slide Aerobics
- \* LW 157 Step Aerobics
- \* LW 158 Pilates
- \* LW 159 Fitness Walking

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 63/70

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. Prior to enrolling BIO 131, you must take BIO 130 or pass the BIO 130 challenge exam. Math skills through Algebra are a must.
- 2. In addition to tuition, fees, and textbook costs, you may have to purchase special shoes, shirts, nametags, and provide transportation to all internship sites.
- 3. Current CPR certification is required for admission to LWT 260. Current CPR certification must be maintained throughout the program.
- 4. You need to be aware that internship assignments may be outside the Tri-county area.
- 5. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation and MACRAO requirements.
- 6. Delta College reserves the right to modify program requirements.
- 7. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

## INDUSTRIAL SUPERVISION

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### Certificate of Achievement

In today's every-changing work place, supervisors need to upgrade their skills. Supervisors are required to manage people and resources to achieve company goals. In order to achieve this, they need to deal with issues such as the diversity of the workers, governmental regulations, along with various business issues. This requires information and the acquisition of new skills to manage in this changing environment. This certificate is designed to give people in a supervisory position the skills and information needed to be effective.

	Sem Hrs
<b>Basic Program Requirements</b>	
* CED 280A Cooperative Education: Technical Management .....	1
* IS 110 Industrial Supervision .....	3
* IS 118 Industrial Safety .....	2
* IS 120 Supervisor/Employee Relations .....	3
* IS 240 Production Planning/Control .....	4
* MGT 153 Introduction to Business .....	3
* MGT 231 Industrial Relations .....	3
* QA 110 Quality Problem Solving Tools .....	1
* QA 191 Quality Teamwork .....	1
* ENV 100 Environmental Regulations .....	3

TOTAL CREDITS REQUIRED FOR CERTIFICATE OF ACHIEVEMENT 24

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. In a ladder program, CED 280A is only required to be taken one time.
- 2. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 3. Delta College reserves the right to modify program requirements.
- 4. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Also see "Manufacturing Technology"

## INDUSTRIAL TECHNOLOGY EDUCATION

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### Associate in Applied Science

The industrial technology major for teachers includes coursework to develop technical competence in the technical core of Manufacturing, Construction, Communications, and Power/Energy. It also includes a professional core of coursework directly related to teaching technology to children and youth in public schools of Michigan. Students **must** transfer to SVSU to complete the Secondary Education Program.

	Sem Hrs
<b>General Education Courses</b>	
* ENG --- Any Approved College Composition I .....	3/5
* ENG --- Any Approved College Composition II .....	3/5
* LW 220 Lifelong Wellness .....	1
* LW --- Any Approved Lifelong Wellness Requirement .....	1
* MTH 119 Intermediate Algebra OR MTH 119A .....	4
* POL --- Any Approved American Government Requirement .....	3/4
* PSY 211 General Psychology .....	4
<b>SUBTOTAL</b>	<b>19/24</b>
<b>Basic Program Requirements</b>	
* AUT 100 Introduction to Auto Service .....	3
* RC 104 Construction Lab 1 .....	3
* RC 205 Cabinetmaking and Millwork .....	5
* CAD 114 Computer Assisted Drafting OR	
* ARC 114 Arch AutoCAD 2D Basics .....	2
* ARC 105 Architectural Drafting I OR	
* DRF 104 Basic Mechanical Design OR	
* DRF 105 Beginning Mechanical Design .....	3/4
* MS 114 Machine Tools .....	3
* MFG 111 Manufacturing Processing .....	3
* EET 235 Electrical Circuits .....	3
* ARC 101 Materials & Methods of Construction OR	
* RC 102 Building Materials .....	3
* WELD103 Fuel Gas Welding & Cutting OR	
* WELD104 Introduction to Shielded Metal Arc Welding .....	3
* ED 200B Exploratory Teaching Secondary Education .....	3
* ITE 330 Careers & Industrial Technology for Children .....	3
* ITE 340 Teaching Methods and Strategies in	
Industrial/Tech Education .....	3
* ITE 350 Curriculum Development & Facility Planning In ITE .....	3
<b>SUBTOTAL</b>	<b>43/44</b>

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/70

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
1. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
  2. Delta College reserves the right to modify program requirements.
  3. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

## INTERIOR DESIGN

Career Pathway ♦ Arts and Communications

### Associate in Business Studies Degree

As an interior designer, you will help make our living, working and playing areas more attractive and useful. You may help clients select furniture, draperies, other fabrics, floor coverings, and accessories, as well as estimate what services or furnishings will cost. The main purpose of designers in retail stores is to provide your customers with interior design services. When you begin as an interior designer, you will usually serve a training period, either with design firms, in department stores, or in furniture stores.

	Sem Hrs
<b>General Education Courses</b>	
LW 220 Lifelong Wellness .....	1
LW --- Any Approved Lifelong Wellness Requirement .....	1
POL --- Any Approved American Government Requirement .....	3/4
PSY 101 Applied Psychology OR	
PSY 211 General Psychology .....	3/4
<b>SUBTOTAL</b>	<b>8/10</b>
<b>Business Courses</b>	
* ARC 105 Architectural Drafting I .....	4
* CED 122 Cooperative Education/ID .....	3
* MGT 110 Business Mathematics .....	3
MGT 145 Principles of Sales .....	3
* MGT 152 Textiles .....	3
MGT 153 Introduction to Business .....	3
MGT 247 Principles of Retailing .....	3
* ID 100 Introduction to Interior Design .....	3
* ID 170 Design Elements .....	4
* ID 200 Space Analysis & Presentation .....	3
* ID 210 Furniture .....	3
* ID 230 Applied Interior Design .....	3
ID 240 Contract Design/Commercial I .....	2
ID 241 Contract Design/Commercial II .....	2
ID 245 Design Trends .....	2
OAT 151 Business Communication I .....	3
OAT 152 Business Communication II .....	3
--- General Elective(s) .....	4
<b>SUBTOTAL</b>	<b>54</b>
<b>TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/64</b>	

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
1. This Program is not intended to transfer to a four-year college or university. It is designed for students who want immediate employment after graduation from Delta.
  2. ID 250 Seminar in Interior Design (2 credits) and ID 251 Merchandise Mart Experience (1 credit) are optional but encouraged.
  3. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
  4. Delta College reserves the right to modify program requirements.
  5. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.



## INTERNATIONAL STUDIES

Career Pathway **Business, Management,  
Marketing and Technology**

### OPTIONS: WITHOUT FOREIGN LANGUAGE SKILLS WITH FOREIGN LANGUAGE SKILLS

#### Advanced Certificate

While pursuing your individual program of studies as a Delta College student, you can earn an "add-on" Certificate in International Studies by successfully completing applicable courses from designated sets (A, B, C) of present Delta courses (or their equivalents). This program is designed to: 1) provide students a wider and deeper range of international awareness and knowledge; 2) promote an interest in other cultures and places; 3) promote an interest in foreign languages; 4) lay the groundwork for future international learning options for you as a Delta graduate, and 5) enhance employment opportunities. The Certificate in International Studies is an "add-on" to the credential for your present program of studies. Courses/credits you already have may be applicable toward the certificate requirements.

	Sem	Hrs
Basic Certificate Program Requirements		
* GEO 113 World Cultural Geography .....	4	
* HIS 112 Survey of Later Western Civilization .....	4	
--- --- Required - Choose from Set B courses .....	6	
<b>SUBTOTAL</b>	<b>14</b>	

OPTION 1 - WITHOUT FOREIGN LANGUAGE SKILLS	
--- --- 3 courses - any combination from Sets A, B, C .....	10
<b>OPTION 1 TOTAL</b>	<b>24</b>

OPTION 2 WITH FOREIGN LANGUAGE SKILLS	
--- --- Foreign Language, 8 cr. (see Set A) .....	8
--- --- 1 course - from Set B or C .....	2/3
<b>OPTION 2 TOTAL</b>	<b>24/25</b>

See below for sets A, B, and C of designated courses:

#### SET A:

Foreign Languages (8 cr. required for Option 2). A two semester sequence is highly recommended.

FR --- French .....	4
GE --- German .....	4
RUS --- Russian .....	4
SPA --- Spanish .....	2/4

#### SET B:

Broad scope Global/International courses (some not offered every semester)

ECN 268 International Studies in Economics .....	4
MGT 265 International Business .....	3
GEO 111 Introduction to Physical Geography .....	4
GEO 255/SOC 265 Third World Development .....	4
HIS 111 Survey of Early Western Civilization .....	4
HIS 232 History of Russia .....	3
POL 221 Comparative Government .....	3
POL 225 International Relations .....	3
1. SOC 231 Cultural Anthropology (is highly recommended) ....	3

#### SET C:

Specialized Global/International courses and/or NOT regularly offered courses:

AGR 205 Agricultural Marketing I: Domestic and Global .....	3
AGR 206 Agricultural Marketing II: Domestic and Global .....	3
ARC 101/RC 102 Materials and Methods of Construction .....	3
BIO 230/SOC 230 Physical Anthropology/Archaeology .....	4
BIO 268 International Studies in Biology .....	4
ECN 268 International Studies in Economics .....	4
MGT 268 International Studies in Business .....	4
GEO 105 Human Geography .....	4
GEO 222 Geography of Asia .....	3
GEO 223 Geography of Europe .....	3
GEO 226 Geography of the U.S. and Canada .....	3
GEO 260 Geography of the Pacific Islands .....	3
GEO 262 Geography of the Canadian Shield .....	1
GEO 264 Geography of the Western U.S. & Canada .....	3
GEO 268 International Studies in Geography .....	4
GLG 268 International Studies in Geology .....	4
HIS 214 Pre-European African History .....	3
HIS 217 Introduction to La Raza (Mexican-American) Studies .....	3
HIS 218 Heritage: Civilization and the Jews .....	2
HIS 268 International Studies in History .....	4
HIS 275 The Vietnam War .....	3
IHU 161/SOC161 International Projects in Cross Cultural Learning .....	1
IHU 162/SOC162 International Projects in Cross Cultural Learning .....	2
LIT 241 Introduction to Mythology .....	3
LIT 242 British Literature .....	3
LIT 243/GEO 243 Literary Geography of the Third World .....	4
LIT 245 Biblical Literature: Old Testament .....	3
LIT 246 Biblical Literature: New Testament .....	3
LIT 268 International Studies in Literature .....	1-4
MUS 211 Music History I .....	3
MUS 212 Music History II .....	3
POL 222 Middle East: Government & Politics .....	3
POL 229 Political Terrorism .....	3
POL 250 Introduction to British Government .....	3
POL 268 International Studies in Political Science .....	4
POL 275 The Vietnam War .....	3
SOC 235 Myths of the World .....	3
SOC 240 Sociology of Sex and Gender .....	3
SOC 265/GEO 265 Third World Development .....	4
SOC 268 International Studies in Sociology .....	4
SOC 271 Religion and Society .....	3
SPA 101 Hispanic Civilizations .....	2
SPA 275 Introduction to Spanish Fiction .....	3
<b>TOTAL CREDITS REQUIRED/CERTIFICATE</b>	<b>24</b>

#### NOTATIONS:

\* A "C" minimum grade is required in each asterisked course.

1. SOC 231 - Cultural Anthropology - is a highly recommended "Basic Program" elective.
2. The semester hours for the Certificate in International Studies are calculated by adding the TOTAL hours earned from successful completion of the courses listed as Basic Certificate Program Requirements, and courses from Sets A, B, or C (or their equivalents) as appropriate for any individual student.
3. Questions regarding this program may be directed to the Director of International/Intercultural Programs or the Counseling Office.
4. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
5. Delta College reserves the right to modify program requirements.

## LEAN MANUFACTURING

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### Certificate of Achievement

The ability of a company to respond to today's market forces involves the identification and management of the value stream. This certificate examines how a company provides value to its customers and then maximizes the use of company resources in order to stay agile and competitive. This certificate also provides the skills needed by companies to focus on value identification and waste reduction while optimizing resources.

	Sem	Hrs
Basic Program Requirements		
1 * CED 280A Cooperative Education: Technical Management .....	1	1
* MFG 113 Lean Organizational Management .....	1	1
* MFG 114 Lean Organizational Practices I .....	1	1
* MFG 115 Lean Organizational Practices II .....	1	1
* MFG 212 Manufacturing Cell .....	2	2
* QA 120 Quality and Productivity Management .....	2	2
* IS 240 Production Planning/Control .....	4	4
* QA 110 Quality Problem Solving Tools .....	1	1
* QA 191 Quality Teamwork .....	1	1

TOTAL CREDITS REQUIRED FOR CERTIFICATE OF ACHIEVEMENT 14

#### NOTATIONS:

\* A "C" (2.0) minimum grade is required in each asterisked course.

1. In a laddered program, CED 280A is only required to be taken one time.
2. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
3. Delta College reserves the right to modify program requirements.
4. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Also see "Manufacturing Technology"



Employers that  
Experience

**the Delta  
Difference**

"We have always considered Delta College an integral part of our manufacturing team. Whether it be hiring qualified machinists for the CNC program or using their excellent training services to develop the technical skills of our existing personnel, Delta has been a proven resource and we look forward to continuing our mutually beneficial relationship."

Tom Berg & Elissa Basil  
Human Resource Department  
Mistequay Group, Ltd.



## LEGAL SUPPORT PROFESSIONAL

### Career Pathway ♦ Human Services

## Associate in Business Studies Degree/ Advanced Certificate

Not all legal work requires a law degree. As a legal support professional you will work directly under the supervision of a lawyer. While the lawyer assumes responsibility for the legal support professional's work, you will often be allowed to perform all the functions of a lawyer other than accepting clients, setting fees, giving legal advice, or presenting a case in court. You will generally do background work for the lawyer and help a lawyer prepare litigation for trial by investigating the facts of the case to make sure that all relevant information is uncovered. Secretarial services are normally required as well.

You may conduct research to identify the appropriate laws, judicial decisions, legal articles, and other material that will be used to determine whether or not the client has a good case. After analyzing all the information, you may prepare a written report that is used by the attorney to decide how the case should be handled. If the attorney decides to file a lawsuit on behalf of the client, you may prepare legal arguments, draft pleadings to be filed with the court, obtain affidavits, and assist the attorney during the trial. You may also keep files of all documents and correspondence important to the case. A growing number of legal support professionals are using computers in their work. Computer software packages are increasingly used to search legal literature stored in the computer and identify legal texts relevant to a specific subject.

	Sem	Hrs
General Education Courses		
LW 220 Lifelong Wellness .....	1	
LW --- Any Approved Lifelong Wellness Requirement .....	1	
POL --- Any Approved American Government Requirement .....	3/4	
PSY 101 Applied Psychology OR		
PSY 211 General Psychology .....	3/4	
SPH 112 Fundamentals of Oral Communication OR		
SPH 114 Interpersonal Communications .....	3	
--- --- General Elective .....	3	
SUBTOTAL		14/16
Business Courses		
>*LAS 110 Roles and Responsibilities .....	3	
>*LAS 115 Principles of Substantive Law .....	3	
>*LAS 120 Legal Research & Writing I .....	3	
>*LAS 125 Civil Litigation I .....	2	
>*LAS 130 Legal Research & Writing II .....	3	
>*LAS 150 Real Estate Law .....	2	
>*LAS 210 Estate & Trust Administration .....	2	
>*LAS 240 Domestic Relations .....	2	
>*LAS 245 Personal Injury .....	3	
>*LAS 250 Corporate Law .....	2	
*OAT 151 Business Communication I .....	3	
OAT 152 Business Communication II .....	3	
*OAT 171 Document Processing: Beginning .....	3	
OAT 172 Document Processing: Intermediate .....	3	
# --- --- Approved Business Electives .....	5	
#*> --- --- Approved LAS Electives .....	6/7	
SUBTOTAL		48/49
TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE		62/65
TOTAL CREDITS REQUIRED FOR CERTIFICATE		31/32

### # Approved Business Electives

ACC 211 Principles of Accounting I .....	4
CST 106 Internet Foundations .....	1
CST 110 Web Page Design .....	1
CST 133 Introduction to Computer Information Technology ..	4
CST 148 Wordperfect for Windows: Beginning .....	1
CST 151 Spreadsheet Fundamentals .....	2
CST 248 Wordperfect for Windows: Intermediate .....	2
CST 257 Database-MS Access .....	3
MGT 153 Introduction to Business .....	3
MGT 251 Business Law I .....	3
MGT 252 Business Law II .....	3
OAT 155 Editing .....	2

### # Approved LAS Electives:

LAS 135 Civil Litigation II .....	2
LAS 201 Computer Assisted Legal Research .....	1
LAS 220 Environmental Law .....	2
LAS 235 Criminal Law and Procedure .....	3
LAS 253 Survey of Bankruptcy Law .....	3
LAS 260 Legal Assistant Internship .....	2

> **CERTIFICATE OPTION** - A Certificate will be awarded when you successfully complete courses preceded by a greater than sign ">".

### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. Proficiency in OAT 170, Keyboarding is required for this program; however, it may be waived by successfully passing a keyboarding test. See Counseling Center.
- 2. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 3. Delta College reserves the right to modify program requirements.
- 4. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

## Scholarship Students Experience

**the Delta  
Difference**

"I believe that this is a terrific thing that you are doing by helping students continue their education ... I truly hope that you will continue with this great kindness. Certainly, I will do my part by maintaining an exceptional grade point average, to prove that you have made a good choice by awarding me with this scholarship."

Audrey Jean Arocha

## MACHINE TOOL CNC OPERATOR

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### Advanced Certificate

The machine tool CNC operator certificate program prepares you for jobs in the machine tool industries with skills you have learned in blueprint reading, sketching, shop mathematics, a variety of manual machine tools, and computer numerical control machinery. Completion of this program allows you to enter the workforce with a broad knowledge of machining skills that may lead to apprenticeship programs or other post-secondary educational programs.

As a machine tool or CNC operator, you will use manual skills and/or computer skills to drive tools such as lathes, mills, profilers, lasers, water jet, wire/sinker electrical discharge machines, tube benders, punches, and grinders to shape metals to precise dimensions. Although some machinists can work with a wide variety of manual or CNC machine tools, most specialize in one or two types. Specific duties may include: studying blueprints, sketches; tool, fixture, and machine setup; programming and editing; machining work pieces; inspecting, verifying, and certifying the product for dimensional accuracy.

	Sem Hrs
General Education Courses	
SPH 114 Interpersonal Communications .....	3
Basic Program Requirements	
CAD 114 AutoCAD Introduction .....	2
1 * CED 280D Cooperative Education: Mechanical Technology .....	1
CNC 160 CNC Programming I .....	3
CNC 201 CNC Tooling and Special Setups .....	2
CNC - - - On-line CNC Programming (below) .....	8
CNC - - - Off-line CNC Programming (below) .....	4
DRF 120 Beginning Industrial Blueprint Reading .....	2
DRF 124 Blueprint Reading for Machine Tool Operators .....	2
MS 101 Machine Shop I .....	4
MS 103 Machine Shop III .....	4
MS 104 Machine Shop IV .....	4
MS 120 Machinist's Handbook .....	2
MT 110 Machine Tool Calculations .....	4
<b>SUBTOTAL</b>	<b>42</b>
On-Line Programming Group - 2 courses required	
CNC 210 Haas Turning Center Control .....	4
CNC 212 Heidenhain TNC-151 Control .....	4
CNC 213 OSP-5000 LG Control .....	4
CNC 214 Anilam GXM Control .....	4
CNC 216 Mazatrol M32/M2 Control .....	4
CNC 217 JAPAX JAPT 3J Control .....	4
CNC 218 Boston Digital SPC EIA/ISO Control .....	4
CNC 219 Haas Machining Center Control .....	4
Off-Line Programming Group - 1 course required	
CNC 221 Surfcam .....	4
CNC 223 TM-APT-GL .....	4
CNC 225 Mastercam .....	4
CNC 226 CAM M-2/M-32 .....	4
CNC 230 ACU-CARV .....	4

TOTAL CREDITS REQUIRED FOR CERTIFICATE 45

#### NOTATIONS:

1. In a ladder program, CED 280D is only required to be taken one time.
2. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
3. Delta College reserves the right to modify program requirements.

Also see "Manufacturing Technology"

## MACHINE TOOL GRINDING SPECIALIST

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### Advanced Certificate

As a grinding specialist, you will machine parts to extremely close tolerances. This skilled occupation includes the operation and set-up of surface grinders, cylindrical and internal grinders, as well as tool and cutter grinders. A person working in this field should have the patience and the ability to work within very close sizes. This certificate will also include training in blueprint reading and shop mathematics. Employment would include all types of large manufacturing and small shop companies.

	Sem Hrs
General Education Courses	
ENG - - - Any Approved College Composition I Course .....	3/5
<b>SUBTOTAL</b>	<b>3/5</b>
Basic Program Requirements	
1 * CED 280D Cooperative Education: Mechanical Technology .....	1
* DRF 120 Beginning Industrial Blueprint Reading .....	2
* DRF 124 Blue Print Reading for Machine Tool Operators .....	2
* MT 110 Machine Tool Calculations .....	4
* MS 120 Machinist's Handbook .....	2
* MS 101 Machine Shop I .....	4
* MS 102 Machine Shop II .....	4
* MS 106 Machine Shop VI .....	4
* MS 108 Machine Shop VIII .....	4
<b>SUBTOTAL</b>	<b>27</b>

TOTAL CREDITS REQUIRED FOR CERTIFICATE 30/32

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
1. In a ladder program, CED 280D is only required to be taken one time.
  2. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
  3. Delta College reserves the right to modify program requirements.

Also see "Manufacturing Technology"



## MACHINE TOOL LATHE SPECIALIST

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### Advanced Certificate

Completion of the Lathe Specialist Certificate enables you to work in a highly skilled occupation. You may be employed in a variety of manufacturing settings. You will be expected to use precision measuring tools, select appropriate tooling, and operate many types of turning machines. After completing the certificate, you may select additional course work in operating and programming computer controlled turning machines and lathes. Employment in this occupation requires math skills including basic trigonometry.

	Sem Hrs
General Education Courses	
ENG - - - Any Approved College Composition I Course .....	3/5
<b>SUBTOTAL</b>	<b>3/5</b>
Basic Program Requirements	
1* CED 280D Cooperative Education: Mechanical Technology .....	1
* DRF 120 Beginning Industrial Blueprint Reading .....	2
* DRF 124 Blue Print Reading for Machine Tool Operators .....	2
* MT 110 Machine Tool Calculations .....	4
* MS 120 Machinist's Handbook .....	2
* MS 101 Machine Shop I .....	4
* MS 103 Machine Shop III .....	4
* MS 105 Machine Shop V .....	4
* MS 107 Machine Shop VII .....	4
<b>SUBTOTAL</b>	<b>27</b>

TOTAL CREDITS REQUIRED FOR CERTIFICATE 30/32

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
1. In a laddered program, CED 280D is only required to be taken one time.
  2. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
  3. Delta College reserves the right to modify program requirements.

Also see "Manufacturing Technology"

## MACHINE TOOL MILLING SPECIALIST

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### Advanced Certificate

After completing this certificate you may be employed in a rewarding skilled occupation. Working from blueprints and drawings, you will use various types of milling machines to shape, drill, bore, and machine a variety of parts to use in manufacturing and assembly. Training will also include classes in math, blueprint reading, and basic computer controlled machining (CNC). This certificate may lead to more advance CNC operations and programming.

	Sem Hrs
General Education Courses	
ENG - - - Any Approved College Composition I Course .....	3/5
<b>SUBTOTAL</b>	<b>3/5</b>
Basic Program Requirements	
1* CED 280D Cooperative Education: Mechanical Technology .....	1
* DRF 120 Beginning Industrial Blueprint Reading .....	2
* DRF 124 Blue Print Reading for Machine Tool Operators .....	2
* MT 110 Machine Tool Calculations .....	4
* MS 120 Machinist's Handbook .....	2
* MS 101 Machine Shop I .....	4
* MS 104 Machine Shop IV .....	4
* MS 105 Machine Shop V .....	4
* MS 109 Machine Shop IX .....	4
<b>SUBTOTAL</b>	<b>27</b>

TOTAL CREDITS REQUIRED FOR CERTIFICATE 30/32

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
1. In a laddered program, CED 280D is only required to be taken one time.
  2. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
  3. Delta College reserves the right to modify program requirements.

Also see "Manufacturing Technology"

# MACHINE TOOL OPERATIONS

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

## OPTIONS:

**LATHE AND GRINDING SPECIALITY**  
**MILLING AND GRINDING SPECIALITY**  
**LATHE AND MILLING SPECIALITY**

## Associate in Applied Science Degree

The Machine Tool Operations Associate degree will provide you with extensive training on at least two common manual machine types used in industry, after which you will be trained on two different computer controlled machines. Completion of this degree will result in a highly skilled and rewarding position in the machining industry.

	Sem	Hrs
General Education Courses		
* ENG --- Any Approved College Composition I Course .....	3/5	
ENG 113 Technical Communications .....		3
LW 220 Lifelong Wellness .....		1
LW --- Any Approved Lifelong Wellness Requirement .....		1
POL --- Any Approved American Government Requirement .....	3/4	
SUBTOTAL		11/14

### Technical Core Program Requirements

Technical Core Program Requirements		
2*	CED 280D Cooperative Education: Mechanical Technology .....	1
*	DRF 120 Beginning Industrial Blueprint Reading .....	2
*	DRF 124 Blue Print Reading for Machine Tool Operators .....	2
*	MT 110 Machine Tool Calculations .....	4
*	MS 112 Ferrous Heat Treatment .....	2
*	MS 120 Machinist's Handbook .....	2
1*	MS 101 Machine Shop I .....	4
*	CNC 160 Computer Numerical Control Programming I .....	3
SUBTOTAL		20

### Option 1 - Lathe and Grinding Specialty

Option 1 - Lathe and Grinding Specialty		
1*MS 102 Machine Shop II .....		4
1*MS 103 Machine Shop III .....		4
1*MS 105 Machine Shop V .....		4
1*MS 106 Machine Shop VI .....		4
1*MS 107 Machine Shop VII .....		4
1*MS 108 Machine Shop VIII .....		4
* CNC 210 Haas Turning Center .....		4
* CNC 213 OSP 5000 LG Control .....		4
SUBTOTAL		32

### Option 2 - Milling and Grinding Specialty

Option 2 - Milling and Grinding Specialty		
1* MS	102 Machine Shop II .....	4
1* MS	104 Machine Shop IV .....	4
1* MS	105 Machine Shop V .....	4
1* MS	106 Machine Shop VI .....	4
1* MS	108 Machine Shop VIII .....	4
1* MS	109 Machine Shop IX .....	4
* CNC	212 Heidenhain TNC 151 Control .....	4
* CNC	216 Mazatrol M-32/M-2 Control .....	4
SUBTOTAL		32

### Option 3 - Lathe and Milling Specialty

Option 3 - Lathe and Milling Specialty		
1* MS	103 Machine Shop III .....	4
1* MS	104 Machine Shop IV .....	4
1* MS	105 Machine Shop V .....	4
1* MS	107 Machine Shop VII .....	4
1* MS	109 Machine Shop IX .....	4
* CNC	210 Haas Turning Center AND .....	4
* CNC	213 OSP 5000 LG Control .....	4
OR		
* CNC	212 Heidenhain TNC 151 Control AND .....	(4)
* CNC	216 Mazatrol M-32/M-2 Control .....	(4)
1* MS	--- Electives OR	
* CNC	--- Electives .....	4
SUBTOTAL		32

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 63/68

### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. MS 101 through 109 are not necessarily taken in the order listed. The faculty will assign you to your next class based on your progress/machine availability. Usually three 5-week machine shop classes are taken per semester.
- 2. In a laddered program, CED 280D, is only required to be taken one time.
- 3. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 4. Delta College reserves the right to modify program requirements.
- 5. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.



# MANAGEMENT

Career Pathway ♦ Business, Management,  
Marketing and Technology

## OPTIONS:

**COSMETOLOGY**    **OFFICE SERVICES**  
**GENERAL**        **RETAIL**  
**MARKETING**     **SMALL BUSINESS**  
**MERCHANDISING**

## Associate in Business Studies Degree/ Advanced Certificate

Delta College offers the following five specialized management degree options:

**COSMETOLOGY MANAGEMENT:** With a current State of Michigan Cosmetology License, you will receive twenty (20) elective credits at Delta College in the Cosmetology Management Program. Upon completion of the Associate Degree Program, you may be able to continue on at Delta in the 3+1 Program with Northwood University. You will also have the skills to open your own salon or manage an existing salon. If you are currently employed in the cosmetology industry, this program of study will also enhance job performance and earning ability. This program will help to fill the void in business training for cosmetology professionals who are required to perform in a business environment with a minimal business background from cosmetology school.

**GENERAL MANAGEMENT:** This program is designed to provide a basic foundation in the major functional areas of business management and allows you to structure an individual program that will meet your own needs.

**MARKETING MANAGEMENT:** This program is designed to prepare you for a career in the field of marketing. As a graduate you will have studied the basics of: advertising from the marketing usage point of view; consumer behavior relating to buying; merchandising policies, budgets and planning; sales; retail organizational structure; product promotion and distribution.

**MERCHANDISING MANAGEMENT:** This program studies the basics of buying, selling, promotional coordination, visual merchandising, and fashion design. This program is designed to prepare you for a career in the field of merchandising.

**OFFICE SERVICES MANAGEMENT:** This program is designed to provide office operations management skills such as: developing and managing systems for office procedures; report and data compilation; filing and record keeping; information gathering techniques; personnel administration.

**RETAIL MANAGEMENT:** This program is designed to provide skills related to the distribution of merchandise and services within a retail store through buying procedures, inventory control and pricing; marketing processes and functions; advertising strategies.

**SMALL BUSINESS MANAGEMENT:** This program is designed specifically for you if you plan to own and manage your own business, work in a small business, or if you currently own a business and want to become more proficient with your skills.

	Sem Hrs
General Education Courses (Required for all options)	
ECN 221 Principles of Economics I .....	4
LW 220 Lifelong Wellness .....	1
LW --- Any Approved Lifelong Wellness Requirement .....	1
POL --- Any Approved American Government Requirement .....	3/4
<b>SUBTOTAL</b>	<b>9/10</b>
Business Courses (Required for all options)	
CST 133 Introduction to Computer Information Technology ....	4
> MGT 110 Business Mathematics .....	3
> MGT 153 Introduction to Business .....	3
* MGT 245 Principles of Management .....	3
> MGT 251 Business Law I .....	3
> OAT 151 Business Communication I .....	3
OAT 152 Business Communication II .....	3
<b>SUBTOTAL</b>	<b>22</b>

Sem  
Hrs

## Cosmetology Management

3 Credit awarded for license based upon standards of the  
Michigan State Board of Cosmetology ..... 20

ACC 111 Introductory Accounting OR	
ACC 211 Principles of Accounting .....	4
MGT 131 Small Business Management .....	3
MGT 145 Principles of Sales .....	3
MGT 132 Small Business Management II OR	
MGT 203 Business Ethics OR	
CST 134 Micro Computers in Business Using MS Office .....	3
<b>SUBTOTAL</b>	<b>33</b>

**TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 64/65**

## General Management

ACC 211 Principles of Accounting I .....	4
ACC 212 Principles of Accounting II .....	4
MGT 243 Principles of Marketing .....	3
MGT 256 Human Resources Management I .....	3
MGT 265 International Business .....	3
MGT 274 Computer Aided Decisions .....	2
--- Electives .....	12
<b>SUBTOTAL</b>	<b>31</b>

**TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/63**

## Marketing Management

ACC 111 Introductory Accounting OR	
ACC 211 Principles of Accounting I .....	4
MGT 143 Principles of Advertising .....	3
MGT 145 Principles of Sales .....	3
MGT 157 Principles of Merchandising .....	3
* MGT 243 Principles of Marketing .....	3
MGT 247 Principles of Retailing OR	
MGT 248 Principles of Buying for Resale OR	
MGT 265 International Business .....	3
* MGT 254 Applied Merchandising and Promotional Strategies ..	3
MGT 274 Computer Aided Decisions .....	2
--- General Electives .....	7
<b>SUBTOTAL</b>	<b>31</b>

**TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/63**

## Merchandising Management

CED 122 Cooperative Education .....	3
MGT 143 Principles of Advertising .....	3
MGT 145 Principles of Sales .....	3
* MGT 151 Merchandising Display .....	3
* MGT 152 Textiles .....	3
* MGT 157 Principles of Merchandising .....	3
MGT 243 Principles of Marketing .....	3
MGT 247 Principles of Retailing .....	3
* MGT 248 Principles of Buying for Resale .....	3
* MGT 254 Applied Merchandising & Promotional Strategies .....	3
--- General Electives .....	1
<b>SUBTOTAL</b>	<b>31</b>

**TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/63**

## Office Services Management

ACC 111 Introductory Accounting OR	
ACC 211 Principles of Accounting I .....	4
CST 151 Spreadsheet Fundamentals .....	2
CST 257 Database-MS Access .....	3
* MGT 256 Human Resources Management I .....	3
MGT 274 Computer Aided Decisions .....	2
OAT 155 Editing .....	2
OAT 157 File Management .....	2
OAT 170 Keyboarding .....	2
OAT 171 Document Processing: Beginning .....	3
--- General Electives .....	8
<b>SUBTOTAL</b>	<b>31</b>

**TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/63**

CONTINUED NEXT PAGE

Sem  
Hrs

## Retail Management

ACC 111 Introductory Accounting OR	4
ACC 211 Principles of Accounting I .....	3
CED 120 Co-Op: Retail/Management .....	
MGT 143 Principles of Advertising .....	
MGT 145 Principles of Sales .....	
MGT 151 Merchandising Display .....	12
MGT 243 Principles of Marketing .....	3
* MGT 247 Principles of Retailing .....	
MGT 248 Principles of Buying for Resale .....	
MGT 256 Human Resources Management I .....	9
--- General Electives .....	
<b>SUBTOTAL</b>	<b>31</b>

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/63

## Small Business Management

> ACC 111 Introductory Accounting OR	4
> ACC 211 Principles of Accounting I .....	3
> CST 134 Micro Computers in Business Using MS Office .....	3
* > MGT 131 Small Business Management I .....	3
* > MGT 132 Small Business Management II .....	3
> MGT 145 Principles of Sales .....	3
> MGT 243 Principles of Marketing .....	3
> MGT 252 Business Law II .....	3
--- General Electives .....	9
<b>SUBTOTAL</b>	<b>31</b>

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/63  
TOTAL CREDITS REQUIRED FOR CERTIFICATE PROGRAM 34

- > **CERTIFICATE OPTION** - A certificate will be awarded when you successfully complete courses preceded by the ">" sign.

## NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. In only the Office Services Management option, OAT 145 may be substituted for CST 133 (one of the Business Courses required). If this is done, the number of elective credits required will increase to 9.
- 2. For more information about the Co-Op Program, inquire at room F-40 (Allied Health Building) or phone 686-9479.
- 3. You may be granted 20 credits approved by the Delta College Business Information and Technology Division Chair upon verification of the proper evidence of a current Michigan State Board of Cosmetology License.
- 4. Although not required, you are encouraged to take MGT 280 Market Experience New York (2 credits) and MGT 281 Market Experience Chicago (1 credit) in the Merchandising Management option.
- 5. The Merchandising Management Program is intended to prepare you for a career upon graduation from Delta College. If you plan to transfer to a four-year college, you should consult a counselor.
- 6. You may receive elective credit based upon prior learning experiences related to the following: (a) Three elective credits will be granted upon presentation of a copy to the Business Division Chair of the grade sheet from the state Real Estate licensing exam. (b) Eight elective credits will be granted upon presentation of copies to the Business Division Chair of the Graduate Realtors Institute (GRI) in Real Estate Principles.
- 7. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 8. Delta College reserves the right to modify program requirements.
- 9. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

## MANAGEMENT DELTA COLLEGE & CANADIAN NATIONAL RAILWAY

Career Pathway ♦ Business, Management,  
Marketing and Technology

### Advanced Certificate

This program has been developed in partnership between Delta College (Corporate and Academic Services) and Canadian National Railway to provide broad management and business skills. Students who complete the two Canadian National Citation programs will receive six credits toward this Certificate program.

Completion of this program gives you a sound basis for continued studies into one of the other Management Associate degree programs.

Sem  
Hrs

## Basic Program Requirements

ACC 211 Principles of Accounting I .....	4
ECN 221 Principles of Economics I .....	4
MGT 110 Business Mathematics .....	3
MGT 153 Introduction to Business .....	3
MGT 243 Principles of Marketing .....	3
1 MGT 245 Principles of Management .....	3
1 MGT 246 Supervision .....	3
MGT 251 Business Law I .....	3
OAT 151 Business Communication I .....	3

TOTAL CREDITS REQUIRED FOR CERTIFICATE 29

## NOTATIONS:

- Upon presentation to the Business and Information Technology Division Chair of proof of completion of both Citation I and Citation II of the Canadian National Railway Training Program (100 and 112 class hours respectively) credit will be granted for MGT 245 and MGT 246.
- File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- Delta College reserves the right to modify program requirements.

Students that  
Experience

the Delta  
Difference

"I decided on Delta because of the affordability. I simply could not get this education anywhere else."

Bartose Borecki, Bay City



## MANAGEMENT/SUBSEQUENT DEGREE

Career Pathway ♦ Business, Management,  
Marketing and Technology

- Option I:** Business Management  
**Option II:** 3+1 Leading to Bachelor  
Degree in Management from  
Northwood University

### Associate in Business Studies Degree

**Option I: Business Management:** Students who already have an Associate or Bachelor Degree from a regionally accredited institution must have 24 credits by instruction at Delta College. Accordingly, the minimum number of credits earned must equal the credits required for the first degree plus 24. Included in the 24 credits will be at least one computer course, one accounting course and GB 245. Choose from the list below:

Course	Credits
ACC 111 Introductory Accounting OR	
ACC 211 Principles of Accounting I .....	4
ACC 212 Principles of Accounting II .....	4
CST 133 Introduction to Computer Information Technology OR	
CST 134 Micro Computers in Business Using MS Office .....	3/4
ECN 221 Principles of Economics .....	4
MGT 153 Introduction to Business .....	3
MGT 243 Principles of Marketing .....	3
MGT 245 Principles of Management .....	3
MGT 246 Supervision .....	3
MGT 251 Business Law I .....	3
MGT 256 Human Resources Management I .....	3
MGT 257 Human Resources Management II .....	3
MGT 265 International Business .....	3
MGT 274 Computer Aided Decision Making .....	2
MGT - - - Business Electives .....	3
OAT 151 Business Communication I .....	3
<b>TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE</b>	<b>24</b>

**Option II: 3 + 1 Northwood:** Students who already have an Associate Degree in any field, (other than management programs) from a regionally accredited institution, who wish to obtain a Bachelor Degree in Management through the Delta College-Northwood partnership must complete the following Delta classes and then complete their senior year at Northwood.

Course	Credits
ACC 211 Principles of Accounting I .....	4
ACC 212 Principles of Accounting II .....	4
CST 133 Introduction to Computer Information Technology ..	4
ECN 221 Principles of Economics I .....	4
ECN 222 Principles of Economics II .....	4
MGT 153 Introduction to Business .....	3
MGT 243 Principles of Marketing .....	3
MGT 245 Principles of Management .....	3
MGT 251 Business Law I .....	3
MTH 208 Elementary Statistics (Math 097 & 119 Prereq.) .....	3
PHL 203 Business Ethics OR	
PHL 215 Health Care Ethics OR	
PHL 230 Bioethics .....	3
<b>TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE</b>	<b>24</b>

#### NOTATIONS:

- Official transcript documenting previous degree will have to be on file in Records and Registration.
- Completion of the above classes will give you an Associate Degree in Business Management from Delta College. Some of the above credits may have been earned on an earlier degree, the minimum number of credits earned must equal the credits required for the first degree plus 24.
- Contact the Delta College Counseling Office at 686-9330 for more information.
- File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- Delta College reserves the right to modify program requirements.

## MANUFACTURING TECHNOLOGY

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### Associate in Applied Science Degree

Manufacturing continues to advance by cutting across all disciplines in order to drive economic growth. This program is designed to give you the flexibility to acquire the knowledge and skills needed in this rapidly changing area. You will be able to develop either a broad understanding of issues facing manufacturing today or you will be able to focus on a specific area. As a manufacturing technologist, you will need to understand the interrelationship of material selection and manufacturing processes in order to operate competitively in a global economy. You will also need to understand the roles quality, cost, delivery, safety and morale play in a successful manufacturing company. Teamwork and communication skills will be emphasized because of the importance they play in your success in the company.

	Sem Hrs
General Education Courses	
ENG - - - Any Approved College Composition I Course .....	3/5
ENG 113 Technical Communications .....	3
SPH 112 Fundamentals of Oral Communications OR	
SPH 114 Interpersonal Communications .....	3/5
POL - - - Any Approved American Government Requirement .	3/4
LW 220 Lifelong Wellness .....	1
LW - - - Any Approved Lifelong Wellness Requirement .....	1
<b>SUBTOTAL</b>	<b>14/19</b>

#### Basic Program Requirements

1 *CED 280D Cooperative Education: Mechanical Technology .....	1
GEO 116 Professional Global Awareness .....	1
MTH 119 Intermediate Algebra OR MTH1 19A .....	4
MTH 208 Elementary Statistics .....	3
PHY 111 General Physics I OR	
CHM 107 Chemistry for Engineering Technology .....	4
MFG 111 Manufacturing Processes .....	3
MFG 113 Lean Organization Management .....	1
QA 110 Quality Problem Solving Tools .....	1
QA 120 Quality and Productivity Management .....	2
Manufacturing Certificate(s) (from list below) .....	30
<b>SUBTOTAL</b>	<b>49/50</b>

**TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 64/69**

#### Manufacturing Certificates/Departments

Total credits required to fulfill the Associate degree from certificates or the approved departments must equal 30. Credits can be from any of the Manufacturing certificates listed below or from any combination of approved departments listed below. These certificate programs are listed in the college catalog under the same titles as below:

Machine Tool Lathe Specialist Advanced Certificate  
Machine Tool Milling Specialist Advanced Certificate  
Machine Tool Grinding Specialist Advanced Certificate  
Quality Management Certificate of Achievement  
Quality Assurance Certificate of Achievement  
Machine Tool CNC Operator Advanced Certificate  
Welding Technology Advanced Certificate  
Industrial Supervision Certificate of Achievement  
Lean Manufacturing Certificate of Achievement  
Approved Departments: MS, CNC, WELD, QA, MFG, IS

#### NOTATIONS:

- In a ladder program, CED 280D is only required to be taken one time.
- File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- Delta College reserves the right to modify program requirements.
- If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

## Post Associate Certificate/ Certificate of Achievement

The Massage Therapy Program is designed for graduates of fully accredited PTA Programs, OTR's, and for the licensed PT, RN, and PN. This program has been developed to build on your previous academic background, and current clinical practice. While completing this certificate program you will be trained in Swedish Massage, Sports Massage, Trigger Point Therapy, Muscle Isolation Techniques, Myofascial Release, Reflexology, Chair Massage, Acupressure, Basic Shiatsu, business & marketing, and ethics. Potential work settings include: Chiropractic and Physician offices, sportsmedicine clinics, Aerobic studios, Beauty Salons, Health Spas, Gyms, on-site corporate massage, or your own independent business. Upon successfully completing this program you will be certified to practice massage in Michigan as a certified massage therapist (CMT), and be able to sit for the National Certification Examination in Therapeutic Massage and Bodywork.

	Sem Hrs
Certificate of Achievement	
1 Licensed Practical Nurse Certificate	
MTP 301 Manual Techniques I.....	6
<b>TOTAL CREDITS REQUIRED FOR CERTIFICATE OF ACHIEVEMENT</b>	<b>6</b>

Post Associate Certificate	
1 Licensed Practical Nurse Degree OR Physical Therapist Assistant Degree	
MTP 301 Manual Techniques I.....	6
<b>TOTAL CREDITS REQUIRED FOR POST ASSOCIATE CERTIFICATE</b>	<b>6</b>

### NOTATIONS:

1. A maximum of 14 students will be accepted each fall semester for the Massage Therapy Program. The procedure for application into the massage program can be obtained from the program coordinators office, counseling office, or health and wellness office. Submit the completed application packet to the Records and Registration office at the time of registration. Applications will be reviewed on a case-by-case basis, and acceptance into the program is granted by permission of instructor. Incomplete applications will not be accepted.
2. Prerequisite qualifications are: a) be admitted to Delta College; and b) provide documentation reflecting one of the following: Graduation from a CAPTE accredited PTA Program, or Michigan Registered Occupational Therapist with current registration, or Michigan licensed PT, RN, or PN, with current license.
3. Students must document in their application packet, evidence of pre-requisite related coursework acquired through their previous formal training program. A minimum number of classroom hours are required in each of the following subject/content areas: Anatomy & Physiology, 150 hours; Bed Mobility, Transfers, Positioning, & Draping, 8 hours; Body Mechanics, 2 hours; Universal Precautions, Sterile Techniques, hygiene standards, Infectious diseases, and infection control, 5 hours; Disease and pathology, 40 hours; Professional communication and documentation, 10 hours; Patient & client Assessment Skills, 40 hours. A specific form will be provided to you in the application packet which you will use to address these pre-requisite areas. The program coordinator reserves the right to deny enrollment into the program if pre-requisite coursework does not meet established minimum requirements.

4. **Program Costs:** Students will be required to purchase the following: 1) textbooks, 2) Student Handbook, 3) table linens, 4) massage creams and/or oils, 4) current malpractice insurance, 5) current CPR certification for admission, and maintained throughout program.
5. Massage Therapy Program hours are offered in a combination of weekday and weekend format, in short-intensive time frames, to accommodate the working professional. Due to these condensed time frames, attendance is mandatory at all sessions in order to successfully complete the program. Make up classes will occur at the discretion of the instructor. A minimum grade of "C" or 77%, is required to successfully complete the course.
6. Students must be admitted to Delta College, and have their official transcripts sent directly to the admissions office.
7. Delta College reserves the right to modify program requirements.

Delta  
Faculty



"Learning is for everyone at all ages. Everyone can do math, it requires determination and hard work."

*Habib Kheil, Saginaw*



## MECHANICAL DESIGN AUTOMATION

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### Post Associate Certificate

Mechanical Design Automation (MDA) is a post-associate degree program of study in computer-aided mechanical design. This curriculum is intended for holders of an associate degree, or higher, from an accredited college or university. Participants will have completed with a grade of C (2.0) or higher, college academic credit or articulated equivalent course work in: ENG 111 or ENG 112, MTH 111, MTH 113, PHY 111, MS 113, MT 221, MT 244, DRF 104 or DRF 105 and CAD 114, MT 252, MFG 111, MT 220 and EET 235.

See a Delta College counselor to review your academic readiness to benefit from MDA course work. A counselor will also help you, if necessary, add course work to your transcript before starting the MDA curriculum.

	Sem	Hrs
<b>Basic Program Requirements</b>		
1,2 CST 228 Windows NT Operating System .....	4	
1,2 MDA 211 Interactive Part Modeling .....	2.4	
1,2 MDA 312 Sketch Modeling .....	2	
1,2 MDA 313 Product Information Management .....	2	
1,2 MDA 305 Design for Assembly .....	1	
1,2 MDA 205 Rapid Prototyping & Tooling .....	0.6	
1,2 MDA 315 UG Design Practice .....	2	
1,2 MDA 321 Advanced Part Modeling .....	3	
1,2 MDA 323 Free Form Design .....	3	
1,2 MDA 325 Assembly Modeling .....	3	
1,2 MDA 327 Design Drafting .....	3	
<b>TOTAL CREDITS REQUIRED FOR CERTIFICATE</b>	<b>26</b>	

#### NOTATIONS:

1. All course work requires long periods of sitting and working at a computer.
2. Counselor approval required to enroll in Mechanical Design Automation (MDA) Certificate Curriculum.
3. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
4. Delta College reserves the right to modify program requirements.
5. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

## MECHANICAL ENGINEERING TECHNOLOGY

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### Associate in Applied Science Degree

This program provides you with a sufficient broad base in the fundamentals of mechanical technology, drafting, CAD, manufacturing and design to be successful as a mechanical engineering technician in a metallurgical or product test laboratory, as a field technician, as an engineering aide in manufacturing or product engineer, in quality control, or in sales and service. Responsibilities as a lab technician may include not only setting up a test apparatus and running tests on an experimental product, but also writing the report and making recommendations. This program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology. Accreditation by TAC/ABET expands your marketability nationally as an engineering technician upon graduation. Refer to [www.delta.edu/tech/mt.html](http://www.delta.edu/tech/mt.html) for a scheduling chart.

	Sem	Hrs
<b>Fall Semester</b>		
* CAD 114 AutoCAD Introduction .....	2	
*1DRF 104 Basic Mechanical Design OR		
*1DRF 105 Beginning Mechanical Design .....	3/4	
MTH 119 Intermediate Algebra OR MTH 119A .....	4	
* MFG 111 Manufacturing Process .....	3	
<b>SUBTOTAL</b>	<b>12/15</b>	
<b>Winter Semester</b>		
CHM 107 Chemistry for Engineering Technology .....	4	
* DRF 107 Intermediate Mechanical Design .....	3	
LW 220 Lifelong Wellness .....	1	
MTH 113 Applied Trigonometry .....	4	
<b>SUBTOTAL</b>	<b>12</b>	
<b>Spring Semester</b>		
ENG --- Any Approved College Composition I Course .....	3/5	
LW --- Any Approved Lifelong Wellness Requirement .....	1	
* MS 113 Machining Processes .....	2	
<b>SUBTOTAL</b>	<b>6/8</b>	
<b>Fall Semester</b>		
* MT 220 Introduction to Fluid Power .....	3	
* MT 221 Materials and Metallurgy .....	3	
MTH 208 Elementary Statistics .....	3	
PHY 111 General Physics I .....	4	
<b>SUBTOTAL</b>	<b>13</b>	
<b>Winter Semester</b>		
* EET 235 Electrical Circuits .....	3	
ENG 113 Technical Communication .....	3	
* MT 251 Statics and Dynamics .....	3	
* MT 255 Kinematics of Mechanisms .....	3	
<b>SUBTOTAL</b>	<b>12</b>	
<b>Spring Semester</b>		
* DRF 257 Advanced Mechanical Design OR		
* MT 256 Machine and Product Design .....	4	
* MT 252 Strength of Materials .....	3	
<b>SUBTOTAL</b>	<b>7</b>	
<b>Fall Semester</b>		
CED 280D Cooperative Education: Mechanical Technology .....	1	
* DRF 257 Advanced Mechanical Design OR		
* MT 256 Machine and Product Design .....	4	
GEO 116 Professional Global Awareness .....	1	
* MDA 205 Rapid Prototyping & Tooling .....	.6	
* MDA 211 Interactive Part Modeling .....	2.4	
PHL 207 Engineering Ethics .....	1	
POL --- Any Approved American Government Requirement .....	3/4	
<b>SUBTOTAL</b>	<b>9/13</b>	
<b>TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE</b>	<b>70/77</b>	

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
1. This program prepares you for a technical-level career upon graduation from Delta College and is transferable into a Baccalaureate technology degree program but not an engineering degree program.
  2. Students wanting to become mechanical engineers are advised to consult with a counselor about transfer college requirements and follow the Delta College pre-engineering program.
  3. If you are in the MET program, you must be a high school graduate.
  4. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
  5. Delta College reserves the right to modify curriculum requirements.
  6. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

# MEDICAL OFFICE PROFESSIONS

Career Pathway ♦ Business, Management  
Marketing and Technology

## OPTIONS:

### MEDICAL TRANSCRIPTION SPECIALIST HEALTH INSURANCE CODING & CLAIMS SPECIALIST MEDICAL SECRETARY

## Associate in Business Studies Degree/ Advanced Certificate

The efficiency of a medical office and the quality of medical care provided depend in large part upon the staff members who supplement and support the role of the physician. As a medical office staff member, you must have strong communication skills, organizational ability, computer knowledge, and excellent human relations skills.

**Medical transcription specialists** enter patient care documentation into medical records as well as completing physicians' correspondence and reports. **Health Insurance coding and claims specialists** accurately report physician services for reimbursement to patients' insurance companies. **Medical secretaries** understand and use medical terminology; complete medical insurance claims; handle correspondence, medical records and physicians' dictation; greet and direct patients; manage appointment schedules and the telephone. They are also required to understand the legal responsibilities of medical office staff members.

#### Core Courses (required for all options)

	Sem	Hrs
>* BIO 101 Introduction to Anatomy and Physiology .....	4	
>* HSC 105 Medical Terminology .....	2	
> HSC 205 Legal Aspects of Health Care .....	2	
> HSC 210 Medical Office Pharmacology .....	1	
> OAT 105 Time Management .....	1	
>*1, 2, 5 OAT 151 Business Communication I .....	3	
<b>SUBTOTAL</b>	<b>13</b>	

#### Medical Transcription Specialist

Core Courses .....	13
>*1, 4 OAT 171 Document Processing: Beginning .....	3
>*1, 4, 5 OAT 172 Document Processing: Intermediate .....	3
>*5 OAT 260 Medical Transcription: Beginning .....	3
>* OAT 262 Medical Transcription: Intermediate .....	3

**TOTAL CREDITS REQUIRED FOR ADVANCED CERTIFICATE 25**

#### Health Insurance Coding & Claims Specialist

Core Courses .....	13
>*1, 4 OAT 171 Document Processing: Beginning .....	3
>* OAT 250 Diagnostic and Procedure Coding .....	3
>* OAT 254 Medical Insurance I .....	3
>* OAT 255 Medical Insurance II .....	3

**TOTAL CREDITS REQUIRED FOR ADVANCED CERTIFICATE 25**

#### Medical Secretary

Core Courses .....	13
1 MGT 153 Introduction to Business .....	3
PHL 203 Business Ethics .....	3
HSC 140 Basic Medical Emergencies .....	2
3 OAT 116 Introduction to the Medical Office .....	2
*2 OAT 152 Business Communication II .....	3
1 OAT 155 Editing .....	2
1 OAT 157 File Management .....	2
*1, 4, 5 OAT 172 Document Processing: Intermediate .....	3
1, 3 OAT 175 Electronic Calculation .....	2
*7 OAT 250 Diagnostic and Procedure Coding .....	3
*5 OAT 254 Medical Insurance I .....	3
* OAT 255 Medical Insurance II .....	3
*5 OAT 260 Medical Transcription: Beginning .....	3
* OAT 266 Medical Office Practice .....	4
*4 OAT 273 Document Processing: Advanced .....	3
<b>SUBTOTAL</b>	<b>54</b>

#### General Education Courses

LW 220 Lifelong Wellness .....	1
LW --- Any Approved Lifelong Wellness Requirement .....	1
POL --- Any Approved American Government Requirement ...	3/4
6 --- --- Electives .....	3
<b>SUBTOTAL</b>	<b>8/9</b>
<b>TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE</b>	<b>62/63</b>

> **CERTIFICATE OPTION** - A Certificate will be awarded when you successfully complete courses preceded by a greater than sign ">".

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. Credit by exam is available for MGT 153, OAT 151, OAT 155, OAT 157, OAT 171, OAT 172, and OAT 175.
- 2. Keyboard assignments are required for OAT 151 Business Communication I and OAT 152 Business Communication II.
- 3. OAT 175 Electronic Calculation and OAT 116 Introduction to the Medical Office require MTH 092 or appropriate assessment score.
- 4. OAT 171 and beginning Word for Windows background is a prerequisite for OAT 172, and OAT 172 and intermediate Word for Windows background is a prerequisite for OAT 273.
- 5. OAT 151, OAT 172, OAT 254, and OAT 260 are prerequisites for OAT 266 Medical Office Practice.
- 6. A suggested elective for this program would be OAT 262 Medical Transcription: Intermediate. Completion of this class would allow you to also earn the Medical Transcription Specialist Certificate.
- 7. OAT 250 Diagnostic and Procedure Coding is a prerequisite for OAT 254 Medical Insurance I.
- 8. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 9. Delta College reserves the right to modify program requirements.
- 10. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.



### Associate in Applied Science Degree

The R.N. program prepares you to function effectively as a member of the health care team. This program requires a strong commitment to critical thinking, team collaboration, leadership, and development of sound clinical knowledge and skills. Upon successfully completing this Program, you are eligible to take the Registered Nurse licensure exam. As a graduate nurse, you will be qualified for employment in structured settings, for example, acute care hospitals, extended care facilities, nursing homes, clinics. This Delta College Program is accredited by the National League for Nursing and approved by the Michigan Board of Nursing.

#### Additional Validation Requirement

1.4\*NUR 100A Introduction to Nursing Careers

#### General Education Courses

2.4*BIO 152 Anatomy and Physiology I AND .....	4
2.4*BIO 153 Anatomy and Physiology II .....	4
OR	
2.4*BIO 240 Human Anatomy AND .....	(4)
2.4*BIO 241 Physiology .....	(4)
2.4*BIO 203 General Microbiology .....	4
4*ENG- - - Any Approved College Composition I Course .....	3/5
4*ENG- - - Any Approved College Composition II Course .....	3/5
4*LW 220 Lifelong Wellness .....	1
4*LW - - - Any Approved Lifelong Wellness Requirement .....	1
4*MT117 Math for Allied Health OR Demonstrate Math Competency through Assessment Testing Office .....	2/0
4*PHL 215 Health Care Ethics .....	3
4*POL - - - Any Approved American Government Requirement .....	3/4
4*PHM285 Pharmacology for Health Care Professionals .....	3
4*PSY 211 General Psychology .....	4
4*SOC 211 Principles of Sociology .....	3

SUBTOTAL 36/43

#### Clinical Program Requirements

3.5,6*NUR 101A Nursing Fundamentals .....	5
3.6*NUR 101B Care of Aging Adult .....	4
*NUR 115 Maternity Nursing .....	3
*NUR 116 Pediatric Nursing .....	3
*NUR 119 Mental Health Nursing .....	3
*NUR 240 Basic Nursing Care of the Adult Client .....	9
*NUR 250 Nursing Care and Management Through the Health Continuum .....	9

SUBTOTAL 36

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 72/79

#### NOTATIONS:

\* A "C" (2.0) minimum grade required in each asterisked course.

1. NUR 100A, Introduction to Nursing Careers, is required for validation to help ensure you make a knowledgeable career decision. Credit does not count towards degree.
2. It is strongly recommended that BIO 152, 153 and 203 be completed within five years of entry into the clinical nursing sequence. Please see nursing counselor with any questions regarding age of Science credits.
3. Prior to attempting to register to begin the clinical sequence, you must complete the "Validation Application for Health Clinical Programs" and be officially validated. See page 28 of this catalog for the required procedures.
4. Prerequisite qualifications for validation are: (a) be admitted to Delta College, (b) provide transcripts reflecting high school diploma or GED, and all other colleges or training institutions attended, (c) demonstrate college level readiness scores on college entrance assessment instrument, (see Counseling for score information), (d) completion with a C (2.0) minimum grade and GPA of 2.5 in required prerequisite courses: NUR 100A, BIO 152, BIO 153, (or BIO 240, BIO 241), BIO 203, College Composition I and II, PHL 215, PHM 285 and MTH 117 (or competency test), (e) and completion of 6 credits from the remaining general education courses listed. Math competency exam is offered through the Assessment/Testing Office, 686-9338. This is necessary because **each** nursing course requires demonstration of math competencies necessary for safe

medication administration. To graduate, **all** general education requirements listed **must** be completed.

5. Due to the limited capacity of clinical facilities and the specific requirements of the accreditation agencies, this Program is considered a "limited enrollment" program. You will be eligible to attempt to register for clinical courses only after successfully completing the prerequisite qualifications and receiving a "Semester and Year of Validation" from Records and Registration.
6. First semester nursing courses are offered Fall and Winter Semesters only.
7. You must achieve a minimum "C" (2.0) grade in each nursing course to continue in the program and to graduate from the program. You must comply with all Nursing Program progression and retention policies.
8. **Program Entry Health Requirements:** As a clinical student, you are required to have a physical exam and TB skin test done annually. The physical examination must confirm that you are free from communicable disease and capable of performing all the duties necessary for the safe care of patients. A positive TB test will require a recent chest x-ray or physician statement verifying absence of disease. Proof of Hepatitis B vaccine immunization must be submitted with the physical exam form or you must submit a signed waiver form. For persons born after 1957 documentation of immunization for MMR must be provided. Evidence of current (within ten years) Td immunization status required. You must submit all up-to-date health requirements to the Nursing Discipline Office prior to entrance into the first clinical course.
9. **C.P.R. Training:** Entering clinical courses, you **must** have a CPR card that **must** remain current throughout the clinical program. Training may be obtained through the Red Cross, Delta College, your local Community Education, or Hospital Education Department. A photocopy of your certificate must be turned in to the Nursing Division Office prior to the start of classes. The CPR certification, known as Professional Rescuers CPR, must include one- and two-person rescuer, infant rescuer and airway obstruction relief. Students with expired CPR certification, TB test, and/or physical exam will be removed from the clinical sequence.
10. In addition to tuition and textbook costs, you must provide your own uniforms, clinic shoes, and transportation to clinical settings, including possible hospital parking charges.
11. You will receive a Nursing Student Handbook upon entering the clinical nursing sequence, which contains additional information, requirements and specific program policies that you must comply with while enrolled in the nursing program.
12. Clinical nursing courses are demanding and intensive. It is recommended that you prepare for this level of involvement by taking at least one semester of full-time study in pre-clinical courses prior to entry into clinical sequence.
13. Any student with a previous or current felony conviction must inform the Nursing Discipline Coordinator and/or nursing counselor of said conviction. Students should be aware that a felony conviction may constitute grounds for ineligibility to sit for the Nursing Licensure examination. The admittance to and/or continuation in a clinical sequence may be affected by a felony conviction. Students should be aware that the current licensure application form now requests the following information:
  - a. History of felony conviction(s).
  - b. History of conviction of a misdemeanor punishable by imprisonment for a maximum of two years.
  - c. History of conviction of a misdemeanor involving illegal delivery, possession or use of alcohol or a controlled substance (including motor vehicle violations).
  - d. Treatment for substance abuse in past two years.
  - e. History of malpractice settlements, awards or judgments.
  - f. Previous application for licensure/or NCLEX in Michigan or other jurisdictions.
  - g. History of revoked, suspended, or denied licensure or registration, or other disciplinary action taken or presently pending. Questions may be directed to the Michigan Board of Nursing, (517) 335-0918.
14. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
15. Delta College reserves the right to modify program requirements.
16. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Also see "Dual Degrees"

# NURSING RN TRANSITION TRACK

## Career Pathway ♦ Health Science

### OPTIONS:

### LICENSED PRACTICAL NURSE LICENSED PARAMEDIC

### Associate in Applied Science Degree

Delta College offers a special track Associate Degree program for currently Licensed Practical Nurses (LPN) and currently licensed paramedics with 1 year full-time equivalent work experience. Good basic mathematical skills are required - refer to notation number 4.

The R.N. program prepares you to function effectively as a member of the health care team. This program requires a strong commitment to critical thinking, team collaboration, leadership, and development of sound clinical knowledge and skills. Upon successfully completing this Program, you are eligible to take the Registered Nurse licensure exam. As a graduate nurse, you will be qualified for employment in structured settings, for example, acute care hospitals, extended care facilities, nursing homes, clinics. This Delta College Program is accredited by the National League for Nursing and approved by the Michigan Board of Nursing.

	Sem	Hrs
General Education Courses		
*1,4 BIO 152 Anatomy and Physiology I AND		4
BIO 153 Anatomy and Physiology II		4
OR		
*1,4 BIO 240 Human Anatomy AND	(4)	
BIO 241 Physiology	(4)	
*1,4 BIO 203 General Microbiology		4
*4 ENG --- Any Approved College Composition I Course		3/5
*4 ENG --- Any approved College Composition II Course		3/5
*4 LW 220 Lifelong Wellness		1
*4 LW --- Any Approved Lifelong Wellness Requirement		1
*4 MTH 117 Math for Allied Health OR Demonstrate Math Competency through Assessment Testing Office		2/0
*4 PHL 215 Health Care Ethics		3
*4 PHM 285 Pharmacology: A Clinical Perspective		3
*4 POL --- Any Approved American Government Requirement		3/4
*4 PSY 211 General Psychology		4
*4 SOC 211 Principles of Sociology		3
	SUBTOTAL	36/43

Clinical Program Requirements - Licensed Paramedic Option		
*2,5,6 NT 160 Transitional Skills and Concepts		1
*2,5,6 NT 161 Transition-Basic Principles of Adult Care		2
*6 NT 162 Role and Function of the RN		2
*6 NT 163 Advanced Principles of Adult Care for the LPN/ Licensed Paramedic		6
*6 NT 215 Transition-Maternity Nursing		3
*6 NT 216 Transition-Pediatric Nursing		3
*6 NT 219 Transition-Mental Health Nursing		3
* NUR 250 Nursing Care and Management Throughout the Health Continuum		9
	SUBTOTAL	29
TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE		65/72

Clinical Program Requirements - LPN Option		
*2,5,6 NT161 Transition-Basic Principles of Adult Care		2
*2,6 NT162 Role and Function of the RN		2
*6 NT163 Advanced Principles of Adult Care for the LPN/ Licensed Paramedic		6
*6 NT 215 Transition-Maternity Nursing		3
*6 NT 216 Transition-Pediatric Nursing		3
*6 NT 219 Transition-Mental Health Nursing		3
* NUR 250 Nursing Care and Management Throughout the Health Continuum		9
	SUBTOTAL	28
TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE		64/71

### NOTATIONS:

- \* A "C" (2.0) or better minimum grade required in each asterisked course.
- 1. It is strongly recommended that BIO 152, 153 and 203 be completed within five years or less of entry into the clinical nursing sequence. Please see nursing counselor with any questions regarding age of science credits.
- 2. Prior to attempting to register to begin the clinical sequence, you must complete the "Validation Application for Health Clinical Programs" and be officially validated. See page 28 of this catalog for the required procedures.
- 3. Only currently LPN's and licensed paramedics have the option to take the Transition Track leading to RN licensure. Proof of current licensure must be provided to Records & Registration at the time of validation. **A minimum of one-year full-time equivalent work experience required before entering into clinicals.** If interested in this option, you should make an appointment with the nursing counselor or academic advisor in the Counseling Center.
- 4. Prerequisite qualifications for validation are: (a) be admitted to Delta College, (b) provide transcripts reflecting high school diploma or GED, and all other colleges or training institutions attended, (c) demonstrate college level readiness scores on college entrance assessment instrument, (see Counseling for score information), (d) completion with a C (2.0) minimum grade and GPA of 2.5 in required prerequisites courses: BIO 152, BIO 153, (or BIO 240, BIO 241), BIO 203, College Composition I and II, PHL 215, PHM 285, and MTH 117 (or competency test), and (e) completion of a least 6 credits from the remaining general education courses listed. Math competency exam is offered through the Assessment/Testing Office, 686-9338, D-101. This is necessary because **each** nursing course requires demonstration of math competencies necessary for safe medication administration. To graduate, **all** general education requirements listed **must** be completed.
- 5. Due to the limited capacity of clinical facilities and the specific requirements of the accreditation agencies, this Program is considered a "limited enrollment" program. You will be eligible to attempt to register for clinical courses only after successfully completing the prerequisite qualifications and receiving a "Semester and Year of Validation" from Records and Registration.
- 6. First semester Transition Clinical Nursing courses (NT 160, NT 161, and NT 162) will be offered Winter semester only. NT 160 is required for Paramedics. If LPN work experience has not been in an acute care setting, this course is highly recommended as an elective. NT 163 is offered in the Spring. NT 215, 216, and 219 are offered in the Fall.
- 7. You must achieve a minimum "C" (2.0) grade in each nursing course to continue in the program and to graduate from the program. You must comply with all Nursing Program Progression and Retention Policies.
- 8. **Program Entry Health Requirements:** As a clinical student, you are required to have a physical exam and TB skin test done annually. The physical examination must confirm that you are free from communicable disease and capable of performing all the duties necessary for the safe care of patients. A positive TB test will require a recent chest x-ray or physician statement verifying absence of disease. Proof of Hepatitis B vaccine immunization must be submitted with the physical exam form or you must submit a signed waiver form. For persons born after 1957 documentation of immunization for MMR must be provided. Evidence of current (within ten years) Td immunization status required. You must submit all up-to-date health requirements to the Nursing Discipline Office prior to entrance into the first clinical course.
- 9. **C.P.R Training:** Entering clinical courses, you must have a CPR card which must remain current throughout the clinical program

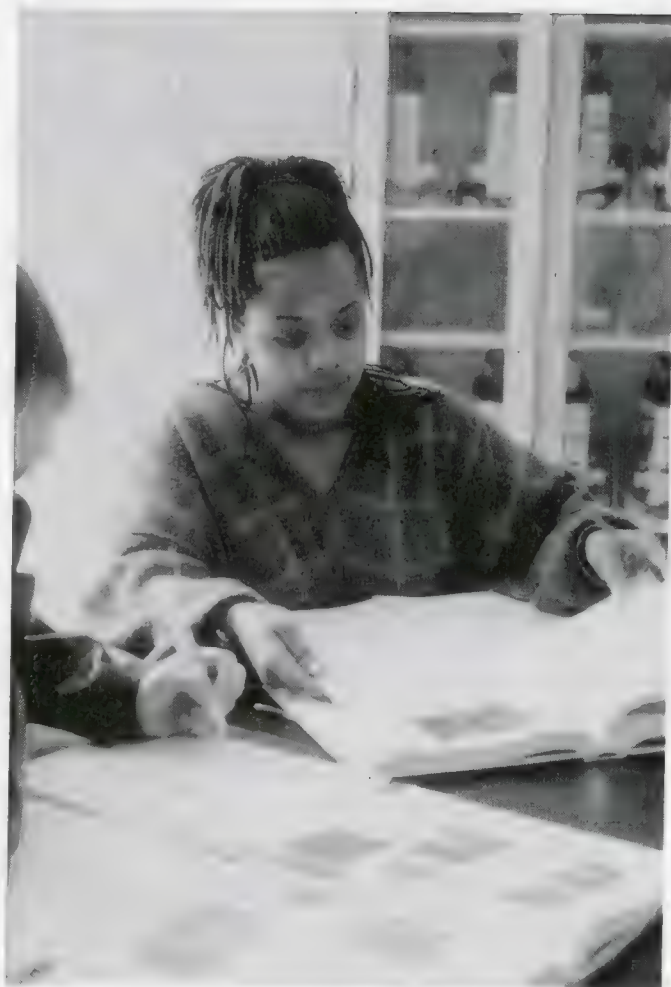
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Training may be obtained through the Red Cross, Delta College, your local Community Education, or Hospital Education Department. A photocopy of your certificate must be turned in to the Nursing Division Office prior to the start of classes. The CPR certification, known as Professional Rescuers CPR, must include one- and two-person rescuer, infant rescuer and airway obstruction relief. Students with expired CPR certification, TB test, and/or physical exam will be removed from the clinical sequence.

10. In addition to tuition and textbook costs, you must provide your own uniforms, clinic shoes and transportation to clinical agency settings, including possible hospital parking charges.
11. You will receive a Nursing Student Handbook upon entering the clinical nursing sequence, which contains additional information, requirements and specific program policies that you are required to comply with while enrolled in the Nursing program.
12. Clinical nursing courses are demanding and intensive. It is recommended that you prepare for this level of involvement by taking at least one semester of full-time study in pre-clinical courses prior to entry into clinical sequence.
13. Any student with a previous or current felony conviction must inform the Nursing Discipline Coordinator and/or nursing counselor of said conviction. Students should be aware that a felony conviction may constitute grounds for ineligibility to sit for the Nursing Licensure examination. The admittance to and/or continuation in a clinical sequence may be affected by a felony conviction. Students should be aware that the current licensure application form now requests the following information:
  - a. History of felony conviction(s).
  - b. History of conviction of a misdemeanor punishable by imprisonment for a maximum of two years.
  - c. History of conviction of a misdemeanor involving illegal delivery, possession or use of alcohol or a controlled substance (including motor vehicle violations).
  - d. Treatment for substance abuse in past two years.
  - e. History of malpractice settlements, awards or judgments.
  - f. Previous application for licensure/or NCLEX in Michigan or other jurisdictions.
  - g. History of revoked, suspended, or denied licensure or registration, or other disciplinary action taken or presently pending.Questions may be directed to the Michigan Board of Nursing, (517) 335-0918.
14. 6 hours of "W" credits required for graduation.
15. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
16. Delta College reserves the right to modify program requirements.
17. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.



## OFFICE PROFESSIONS

Career Pathway **Business, Management,  
Marketing and Technology**

**OPTIONS: OFFICE SKILLS CORE  
OFFICE ASSISTANT  
OFFICE SPECIALIST  
ADMINISTRATIVE ASSISTANT**

### Associate in Business Studies Degree/ Certificate of Achievement/ Advanced Certificate

Office professions continue to evolve along with new office automation and organizational restructuring. In many cases, office professionals have assumed new responsibilities and learned to operate a variety of office equipment. Most organizations employ office professionals to perform and coordinate office activities and to ensure that information is disseminated to staff and clients. Managers, professionals, and other support staff rely on them to keep administrative operations under control.

Office professionals are responsible for a variety of clerical and administrative duties that are necessary to run and maintain organizations efficiently. They use personal computers to communicate electronically and to run spreadsheet, word processing, data base management, desktop publishing, and graphics programs.

Administrative assistants perform fewer clerical tasks than lower-level office professionals. In addition to receiving visitors, arranging conference calls, and answering letters, they may handle more complex responsibilities such as conducting research, preparing statistical reports, and supervising other clerical staff.

The following certificates have been ladderred (sequenced) to lead to the completion of the associate degree:

	Sem	Hrs
<b>Office Skills Core</b>		
>1 CST 103 Windows Foundations .....	1	1
> OAT 105 Time Management .....	1	1
>*2,3 OAT 150 Business English .....	3	3
>1 OAT 157 File Management .....	2	2
>*1,5 OAT 171 Document Processing: Beginning .....	3	3
>1 OAT 175 Electronic Calculation .....	2	2
<b>TOTAL CREDITS REQUIRED/OFFICE SKILLS CORE</b>		<b>12</b>
<b>CERTIFICATE OF ACHIEVEMENT</b>		
<b>Office Assistant</b>		
Office Skills Core .....	12	12
> CST 147 Presentation Graphics Using PowerPoint .....	2	2
>* CST 151 Spreadsheet Fundamentals .....	2	2
>*1,2,6 OAT 151 Business Communication I .....	3	3
>*1 OAT 172 Document Processing: Intermediate .....	3	3
> PHL 203 Business Ethics .....	3	3
<b>TOTAL CREDITS REQUIRED/OFFICE ASSISTANT</b>		<b>25</b>
<b>ADVANCED CERTIFICATE</b>		
<b>Office Specialist</b>		
Office Assistant Advanced Certificate .....	25	25
> CST 106 Internet Foundations .....	1	1
> CST 110 Basic Web Page Development .....	1	1
> CST 146 Desktop Publishing - Pagemaker .....	2	2
>* CST 257 Database-MS Access .....	3	3
>*6 OAT 152 Business Communication II .....	3	3
>1 OAT 155 Editing .....	2	2
>7,8 OAT 166 Office Externship .....	3	3
>9 OAT 285 Office Technology .....	3	3
<b>TOTAL CREDITS REQUIRED/OFFICE SPECIALIST</b>		<b>43</b>
<b>ADVANCED CERTIFICATE</b>		

#### Administrative Assistant

Office Specialist Advanced Certificate .....	43
ACC 111 Introductory Accounting OR .....	
4 ACC 211 Principles of Accounting I .....	4
1 MGT 153 Introduction to Business .....	3
* OAT 268 Professional Office Procedures .....	3
* OAT 273 Document Processing Advanced .....	3
<b>SUBTOTAL</b>	<b>56</b>

#### General Education Courses

ENG 195 Library Research Skills OR .....	1
LIB 195 Library Research Skills .....	1
LW 220 Lifelong Wellness .....	1
LW - - - Any Approved Lifelong Wellness Requirement .....	3/4
POL - - - Any Approved American Government Requirement .....	3/4
<b>SUBTOTAL</b>	<b>6/7</b>

**TOTAL CREDITS REQUIRED FOR  
ADMINISTRATIVE ASSISTANT ASSOCIATE DEGREE 62/63**

> **CERTIFICATE OPTION** - A Certificate will be awarded when you successfully complete courses preceded by a greater than sign ">".

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. Credit by examination is available for CST 103, OAT 151, OAT 155, OAT 157, OAT 171, OAT 172, OAT 175, and MGT 153.
- 2. OAT 151 Business Communication I may be substituted for OAT 150 Business English with satisfactory assessment testing score. (40 or higher on ASSET; 65 or higher on COMPASS)
- 3. If OAT 150 is not required, three credits of electives must be taken to complete the Office Assistant certificate.
- 4. If you are planning to transfer, you should select ACC 211.
- 5. OAT 171 may be waived with evidence of high school articulation.
- 6. Keyboarded assignments required for OAT 151 Business Communication I and OAT 152 Business Communication II.
- 7. Students must apply for placement in OAT 166 Office Externship in semester previous to anticipated placement.
- 8. CED 165 Cooperative Education may be substituted for OAT 166 Office Externship. Call the Co-op Office at 686-9474.
- 9. On-site visitations required in OAT 285 Office Technology.
- 10. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 11. Delta College reserves the right to modify programs requirements.
- 12. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.



## PARAMEDIC

Career Pathway ♦ Health Science

### Associate in Applied Science Degree - Health Care Services

As a paramedic working under the direction of a physician (often through radio communication), you recognize, assess, and manage medical emergencies of acutely ill or injured patients in prehospital care settings. You work principally in advanced life-support units, hospital emergency rooms, and ambulance services under medical supervision.

	Sem Hrs
General Education Courses	
CST 103 Windows Foundations .....	1
ENG --- Any Approved College Composition I Course .....	3/5
ENG --- Any Approved College Composition II Course OR	
ENG 113 Technical Communications .....	3
LW 220 Lifelong Wellness .....	1
LW --- Any Approved Lifelong Wellness Requirement .....	1
MTH 117 Math Allied Health OR	
MTH 119 Intermediate Algebra OR	
MTH 119A Intermediate Algebra Expanded Hours .....	2/4/6
PHL 215 Health Care Ethics OR	
PHL 203 Business Ethics .....	3
POL --- Any Approved American Government Requirement .	3/4
PSY 101 Applied Psychology OR	
PSY 211 General Psychology .....	3/4
SOC 211 Principles of Sociology .....	3
SPH 114 Interpersonal Communications .....	3
SUBTOTAL	26/34
Additional Program Requirements	
1 Experience (Paramedic: Certification/License/Training) .....	30
Complete additional 9 credit hours to be selected from courses listed below:	
BIO 152 Anatomy & Physiology I AND .....	4
BIO 153 Anatomy & Physiology II .....	4
OR	
BIO 240 Human Anatomy AND .....	(4)
BIO 241 Physiology .....	(4)
BIO 203 Microbiology .....	4
MGT 153 Introduction to Business .....	3
MGT 243 Principles of Marketing .....	3
MGT 245 Principles of Management .....	3
MGT 251 Business Law I .....	3
SPA 105 Conversational Spanish - Introduction OR	
SPA 107 Spanish for Medical Personnel OR	
ASL 111 Sign Language I .....	2/1/3
SUBTOTAL	39
TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE	65/73

#### NOTATIONS:

1. Students may be granted 30 credits for a current Paramedic License in the State of Michigan accepted as State-certified training applicable to the Health Care Services (Paramedic) occupational curricula at Delta College as approved by the Delta College Health and Wellness Division Chair.
2. These general education course options are recommended for transfer: ENG 112, MTH 119, PSY 211, SOC 211, and PHL 215.
3. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
4. Delta reserves the right to modify program requirements.

Also see "Dual Degrees"

## PERSONAL TRAINER

Career Pathway ♦ Human Services

### Advanced Certificate

Upon completion of the Personal Trainer Certificate Program, you will have the knowledge and skills necessary to effectively assist apparently healthy individuals and those with controlled diseases in exercising safely and achieving higher levels of fitness or athletic performance. This program will provide the knowledge and practical experience in all of the following areas: client consultation and assessment, fitness program development, exercise techniques, safety procedures, and legal issues. Upon completion of this program, you will be eligible to sit for the American Council on Exercise (ACE) certification exam.

	Sem Hrs
Basic Program Requirements	
* BIO 101 Introduction to Anatomy and Physiology .....	4
* SPH 202 Oral Communications for Managers .....	3
* LW 220 Lifelong Wellness .....	1
* LWT 180 Responding to Emergencies .....	2
* LWT 210 Nutrition: The Science of Optimal Living .....	3
* LWT 230 Theory of Strength Training .....	2
* LWT 241 Personal Trainer .....	4
* LWT 255 Health Fitness Management and Promotion .....	3
* LW --- Lifelong Wellness Electives .....	2
TOTAL CREDITS REQUIRED FOR CERTIFICATE	24

#### # Lifelong Wellness Electives - Choose two of the following

- \* LW 110 Jogging
- \* LW 111 Circuit Training
- \* LW 116 Tai Chi
- \* LW 131 Racquetball
- \* LW 151 Kick Boxing
- \* LW 152 Astanga Yoga
- \* LW 154 NIA-Neuromuscular Integrated Action
- \* LW 158 Pilates
- \* LW 159 Fitness Walking

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 2. Delta reserves the right to modify program requirements.

# PHYSICAL THERAPIST ASSISTANT

## Career Pathway + Health Science

### Associate in Applied Science Degree

Delta's program is for the training of Physical Therapist Assistants only. If you are planning to become a Physical Therapist, you should follow the Pre-Physical Therapy program guide sheet available in Delta's Counseling Center.

As a Physical Therapist Assistant you will work under the direction and supervision of Physical Therapists. Such settings include: Acute care hospitals, rehabilitation centers, school systems, nursing homes, home care, out-patient facilities, private clinics, and specialty clinics. As a graduate of this program, you will be able to carry out patient treatment programs designed by the Physical Therapist which utilize heat, cold, light, sound, massage, therapeutic exercise, aquatics, manual therapy, and rehabilitation procedures. This is a suggested enrollment sequence for full time students. It is suggested that part time students see an advisor for scheduling assistance.

	Sem	Hrs
General Education Courses		
* BIO 140 Essentials of Human Anatomy & Physiology OR .....	5	
* BIO 152 Anatomy and Physiology I AND .....	(4)	
* BIO 153 Anatomy and Physiology II .....	(4)	
OR		
* BIO 240 Human Anatomy AND .....	(4)	
* BIO 241 Physiology .....	(4)	
* ENG --- Any Approved College Composition I Course .....	3/5	
* ENG --- Any Approved College Composition II Course .....	3/5	
* HSC 105 Medical Terminology .....	2	
* POL --- Any Approved American Government Requirement .....	3/4	
* PSY 211 General Psychology .....	4	
* SPH 114 Interpersonal Communications .....	3	
SUBTOTAL		23/31

Prior to attempting to register to begin the clinical sequence, you must complete the "Validation Application for Health Clinical Programs," including observation requirements, and be officially validated. See page 28 of this catalog for the required procedures.

#### Basic Program Requirements Clinical Course Sequence

Semester 1 (Fall)		
* PTA 101 Clinical Anatomy I .....	2	
* PTA 105 Modalities I .....	5	
* PTA 110 Therapeutic Exercise I .....	3	
* LW 206A Occupational Wellness .....	1	
SUBTOTAL		11
Semester 2 (Winter)		
* PTA 102 Clinical Neuroanatomy .....	2	
* PTA 120 Therapeutic Exercise 2 .....	2	
* PTA 123 Clinical Medicine I .....	3	
* PTA 124 P.T.A. Clinic 1 .....	2	
* PTA 125 Measurement Techniques .....	3	
* LW 206B Occupational Wellness .....	5	
SUBTOTAL		12.5
Semester 3 (Spring)		
* PTA 121 Human Growth and Development .....	3	
SUBTOTAL		3
Semester 4 (Fall)		
* PTA 205 Modalities II .....	2	
* PTA 210 Therapeutic Exercise 3 .....	4	
* PTA 213 Clinical Medicine II .....	1	
* PTA 214 P.T.A. Clinic 2 .....	3	
* PTA 215 Rehabilitation Programs .....	2	
* LW 206C Occupational Wellness .....	5	
SUBTOTAL		12.5

#### Semester 5 (Winter)

* PTA 221 Clinical Seminar .....	2
* PTA 224 P.T.A. Clinic 3 .....	9
SUBTOTAL	11
TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 79/84	

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 79/84

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. A maximum of 30 students will be accepted each Fall semester for Physical Therapist Assistant courses. The procedures for application into the P.T.A. Program as in the guidelines for validation which are in the Counseling Center and on page 30 of this catalog. You will be eligible to attempt to register for clinical courses only after successfully completing the prerequisite qualifications and receiving a "Semester and Year of Validation" from Records and Registration.
- 2. Prerequisite qualifications are: High school graduate or GED equivalent; completion, with a C (2.0) minimum grade in each, HSC 105, SPH 114, BIO 152, 153, (or BIO 240, 241) and BIO 250; and completion, with a C (2.0) minimum grade in each of at least 6 credits from the remaining general education courses listed; provide transcripts from high school and all other colleges attended; be admitted to Delta College.
- 3. Prior to enrolling in BIO 152, you must take BIO 130 or pass the BIO 130 challenge exam. Math skills through Algebra are recommended.
- 4. Physical Therapist Assistant courses are offered day and evening hours and must be taken in the sequence shown. There are occasional weekend classes.
- 5. You must achieve a minimum C (2.0) grade in each Physical Therapist Assistant course to be eligible to continue in the program.
- 6. In addition to tuition, fees, and textbook costs, you must purchase lab coats, clinic shoes, name tags, registration fees for conferences, provide your transportation to clinical settings (plus possible hospital parking charges), and off-campus experiences.
- 7. After notification is received for validation, you must have a complete physical examination including a negative TB test or a physician's release form annually.
- 8. Current CPR certification is required for admission to the clinical sequence. Current CPR certification must be maintained throughout the program.
- 9. Proof of Hepatitis B vaccination or signed waiver is required for admission to clinical sequence.
- 10. An observation series is also required. Before you finish your prerequisites, you must observe two different PTs or PTAs performing their skills in two different offices for a minimum of 8 hours each. These observations must be documented on the Observation Form which can be picked up in the Counseling Office. These forms must then be turned into Records and Registration, with your Validation Application.
- 11. You need to be aware that clinical hospital assignments may be outside the Tri-county area.
- 12. Student Re-entry Procedures are printed in the handbook given to all clinical students.
- 13. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 14. Delta College reserves the right to modify program requirements.
- 15. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Also see "Dual Degrees"



# PRACTICAL NURSE

## Career Pathway ♦ Health Science

### Advanced Certificate

The P.N. clinical coursework is an intense FULL-TIME three semesters that require college-level reading, writing, and applied math skills.

	Sem	Hrs
Additional Validation Requirement		
1,4* NUR 100A Introduction to Nursing Careers		
Basic Program Requirements - Pre-Clinical		
2,3,4*BIO 152 Anatomy & Physiology I AND	4	
2,3,4*BIO 153 Anatomy & Physiology II	4	
OR		
2,3,4*BIO 240 Human Anatomy AND	(4)	
2,3,4*BIO 241 Physiology	(4)	
4 *ENG - - -Any Approved College Composition I Course	3/5	
4 *HSC 105 Medical Terminology	2	
4 *MTH 117 Math for Allied Health OR		
Demonstrate Math Competency	2/0	
2,3,4*PHM 285 Pharmacology for Health Care Professionals	3	
<b>SUBTOTAL</b>	<b>16/20</b>	

Prior to attempting to register to begin the clinical sequence, you must complete the "Validation Application for Health Clinical Programs" and be officially validated. See page 28 of this catalog for the required procedures.

#### Clinical Course Work

* PNE 121 Fundamentals of Practical Nursing	9
* PNE 122 Care of Adult I	9
* PNE 123 Maternal Child Care Nursing	6
* PNE 124 Care of Adult II	5
<b>SUBTOTAL</b>	<b>29</b>
<b>TOTAL CREDITS REQUIRED/CERTIFICATE</b>	<b>45/49</b>

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required for each asterisked course.
- 1. NUR 100A, Introduction to Nursing Careers is required for validation to help ensure student makes a knowledgeable career decision. Credit does not count towards degree.
- 2. It is strongly recommended that BIO 152 and 153 be completed within five years of entry into the clinical nursing sequence. Please see nursing counselor with any questions regarding age of science credits.
- 3. It is strongly recommended that BIO 152 and 153 be completed within five years of entry into the clinical nursing sequence. Please see nursing counselor with any questions regarding age of science credits.
- 4. Prerequisite qualifications for validation are: (a) be admitted to Delta College, (b) provide transcripts reflecting high school diploma or GED, and all other colleges or training institutions attended, (c) demonstrate college level readiness scores on college entrance assessment instrument, (see Counseling for score information), (d) completion, with a "C" (2.0) minimum grade and minimum GPA of 2.5 in required prerequisite courses: BIO 152 and BIO 153, (or BIO 240, 241) College Composition I, HSC 105, MTH 117 (or competency test), NUR 100A, and PHM 285. Math competency exam is offered through the Assessment/Testing Office, 686-9338, D-101. This is necessary because each nursing course requires demonstration of math competencies necessary for safe medication administration. To graduate, **all** general education requirements listed **must** be completed.

- 5. Due to the limited capacity of clinical facilities and the specific requirements of the accreditation agencies, this Program is considered a "limited enrollment" program. You will be eligible to attempt to register for clinical courses only after successfully completing the prerequisite qualifications and receiving a "Semester and Year of Validation" from Records and Registration.
- 6. First semester nursing courses are offered Fall Semester only.
- 7. You must achieve a minimum "C" (2.0) grade in each nursing course to be eligible to continue in the program and to graduate from the program. You must comply with all Nursing Program Progression and Retention Policies.
- 8. **Program-Entry Health Requirement:** As a clinical student, you are required to have a physical exam and TB skin test done annually. The physical examination must confirm that you are free from communicable disease and capable of performing all the duties necessary for the safe care of patients. An annual TB skin test is required. A positive TB test will require a recent chest x-ray or physician statement verifying absence of disease. Proof of Hepatitis B vaccine immunization must be submitted with the physical exam form or you must submit a signed waiver form. For persons born after 1957 documentation of immunization for MMR must be provided. Evidence of current (within ten years) Td immunization status required. You must submit all up-to-date health requirements to the Nursing Division Office prior to entrance into the first clinical course.
- 9. **C.P.R. Training:** Entering clinical courses, you must have a CPR card which must remain current throughout the clinical program. Training may be obtained through the Red Cross, Delta College, your local Community Education, or Hospital Education Department. A photocopy of your certificate must be turned in to the Nursing Division Office prior to the start of classes. The CPR certification, known as Professional Rescuers CPR, must include one-and two-person rescuer, infant rescuer and airway obstruction relief. Students with expired CPR certification, TB Test, and/or physical exam will be removed from the clinical sequence.
- 10. In addition to tuition and textbook costs, you must provide your own supplies, (i.e., uniforms, clinic shoes, name tags) and transportation to clinical agency settings, including possible parking charges.
- 11. You will receive a Nursing Student Handbook upon entering the clinical nursing sequence, which contains additional information, requirements and specific program policies that you are required to comply.
- 12. Any student with a previous or current felony conviction must inform the Nursing Discipline Coordinator and/or nursing counselor of said conviction. Students should be aware that a felony conviction may constitute grounds for ineligibility to sit for the Nursing Licensure examination. The admittance to and/or continuation in a clinical sequence may be affected by a felony conviction. Students should be aware that the current licensure application form now requests the following information:
  - a. History of felony conviction(s).
  - b. History of conviction of a misdemeanor punishable by imprisonment for a maximum of two years.
  - c. History of conviction of a misdemeanor involving illegal delivery, possession or use of alcohol or a controlled substance (including motor vehicle violations).
  - d. Treatment for substance abuse in past two years.
  - e. History of malpractice settlements, awards or judgments.
  - f. Previous application for licensure/or NCLEX in Michigan or other jurisdictions.
  - g. History of revoked, suspended, or denied licensure or registration, or other disciplinary action taken or presently pending. Questions may be directed to the Michigan Board of Nursing (517) 335-0918.
- 13. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 14. Delta College reserves the right to modify program requirements.

## QUALITY ASSURANCE

Career Pathway ♦ Business, Management,  
Marketing and Technology

### Certificate of Achievement

Quality professionals work within the quality assurance function to ensure that customer requirements are met. They work with measurements, statistics, and other elements within the quality assurance system. Problem solving and verification activities are also an important function of the quality professional's responsibility. Information and skills are needed by today's quality professional to ensure the quality function is being performed correctly. This certificate is designed to ensure that quality professionals in various businesses and industries acquire the information and skills needed to be effective.

	Sem Hrs
Basic Program Requirements	
* MTH 208 Statistics .....	3
* QA 110 Quality Problem Solving Tools .....	1
* QA 120 Quality and Productivity Management .....	2
* QA 124 Quality Systems I .....	3
* QA 126 Quality Systems II .....	3
* QA 131 Quality Auditing .....	2
* QA 140 Measurement Systems .....	3
* QA 191 Quality Teamwork .....	1
* QA 244 Statistical Process Control .....	3

TOTAL CREDITS REQUIRED FOR CERTIFICATE 21

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 2. Delta reserves the right to modify program requirements.

Also see "Manufacturing Technology"

## QUALITY MANAGEMENT

Career Pathway ♦ Business, Management,  
Marketing and Technology

### Certificate of Achievement

Upon completion of the Quality Management Certificate, you will have the knowledge and skills necessary to effectively plan and implement an internal quality system. In today's competitive business environment, a system to ensure that the customer's needs are identified and requirements are met is a business function. Quality Assurance professionals must maintain an effective quality system no matter what business, industry, organization or governmental body they work for. This certificate is designed for those people working in various fields and occupations who are responsible for the management of the quality assurance function.

	Sem Hrs
Basic Program Requirements	
* QA 120 Quality and Productivity Management .....	2
* QA 124 Quality Systems I .....	3
* QA 126 Quality Systems II .....	3
* QA 131 Quality Auditing .....	2
* QA 191 Quality Teamwork .....	1

TOTAL CREDITS REQUIRED FOR CERTIFICATE 11

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 2. Delta reserves the right to modify program requirements.

Also see "Manufacturing Technology"

Students that  
Experience

the Delta  
Difference

"I decided on Delta because of the location, affordability,  
and the friendliness of the instructors."

Dominic Finazzi, Bay City



# RADIOGRAPHY

## Career Pathway ♦ Health Science

### Associate in Applied Science Degree

Working under the supervision of a physician, Radiographers (also called Radiologic Technologists) assist in patient care and diagnosis through the use of x-ray equipment to take images of the internal structures of a patient's body. Radiographers position the patient; determine and set exposure factors; expose and process the required number of radiographs; prepare and help administer chemical mixtures called contrast media; assist in fluoroscopic examinations; and use radiation protection devices and techniques. Upon successfully completing this program, you are eligible to take the national certification examination administered by the American Registry of Radiologic Technologists. This program is accredited by the Joint Review Committee on Education in Radiologic Technology. This is a suggested enrollment sequence for full time students. It is suggested that part time students see an advisor for scheduling assistance.

Sem  
Hrs

#### General Education Courses: Required for Validation

3,5*BIO 140 Essentials of Anatomy & Physiology	
OR	
3,5*BIO 152 Anatomy and Physiology I AND	
3,5*BIO 153 Anatomy and Physiology II	
OR	
3,5*BIO 240 Human Anatomy AND	
3,5*BIO 241 Physiology	4/8
3 *CST 103 Windows Foundation	1
3 *ENG --- Any Approved College Composition I Course	3/5
3 *ENG 113 Technical Communication	3
3 *HSC 105 Medical Terminology	2
3 *POL --- Any Approved American Government Requirement	3/4
3 *PSY 101 Applied Psychology OR	
3 *PSY 211 General Psychology	3/4
<b>SUBTOTAL</b>	<b>19/27</b>

Prior to attempting to register to begin the clinical sequence you must complete the "Validation Application for Health Clinical Programs" and be officially validated. See page 28 of this catalog for the required procedures.

#### Clinical Course Sequence:

##### First Semester (Fall)

* RAD 104 Introduction to Medical Imaging	2
* RAD 105 Fundamentals of Radiography	3
* RAD 108 Patient Care and Management	2
* RAD 110 Principles of Radiographic Exposure	2
* LW 206A Occupational Wellness 1	1
<b>SUBTOTAL</b>	<b>10</b>

##### Second Semester (Winter)

* RAD 120 Principles of Radiation Biology & Protection	2
* RAD 130 Radiographic Procedures I	2
* RAD 135 Clinical Education I	6
* RAD 140 Clinical Seminar I	1
* LW 206B Occupational Wellness 2	5
<b>SUBTOTAL</b>	<b>11.5</b>

##### Third Semester (Spring)

* RAD 150 Radiographic Procedures 2	2
* RAD 160 Clinical Education 2	7
* RAD 165 Clinical Seminar 2	1
* LW 206C Occupational Wellness 3	5
<b>SUBTOTAL</b>	<b>10.5</b>

##### Fourth Semester (Fall)

* RAD 205 Pharmacology in Imaging	1
* RAD 210 Pathology in Radiography	2
* RAD 212 Advanced Imaging Equipment	1
* RAD 215 Radiographic Procedures 3	2
* RAD 220 Clinical Education 3	7
* RAD 225 Clinical Seminar 3	1
<b>SUBTOTAL</b>	<b>14</b>

##### Fifth Semester (Winter)

* RAD 230 Quality Improvement	1
* RAD 232 Radiation Physics	2
* RAD 235 Radiographic Procedures 4	2
* RAD 245 Clinical Education 4	7
* RAD 250 Clinical Seminar 4	1
<b>SUBTOTAL</b>	<b>13</b>

##### Sixth Semester (Spring)

* RAD 260 Clinical Education 5	5
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TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 83/91

#### NOTATIONS:

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. Approximately 18 students will be accepted each Fall Semester for Radiography courses. After successfully completing the prerequisite qualifications and submitting a "Validation Application for Health Clinical Programs," you will be eligible to attempt to register per special phone registration listed in the Fall Schedule of Academic Classes. The procedures for application into the clinical portion of the Radiography Program are listed on page 28 of this catalog and are available in the Counseling Office.
- 2. **Program qualifications include:** (a) high school graduate or GED equivalent; (b) be admitted to Delta College; (c) provide transcripts from high school and all other colleges attended.
- 3. **Validation requirements:** (a) Math competency as demonstrated by a minimum score of 38 on ASSET or 41 on COMPASS on the elementary algebra portion of the test **OR** MTH 097 with a C (2.0) minimum grade; (b) Reading competency as demonstrated by a minimum test score of 41 on ASSET or 81 on COMPASS, **OR** ENG 109 with a C (2.0) minimum grade. Please see health programs counselor for additional information. (c) Successful completion of **each** of the prerequisite courses with a C (2.0) minimum grade; (d) An observation series is required for validation. While completing prerequisite course work, you must observe in two (2) different hospital Radiology departments for a minimum of four (4) hours each. These observations must be documented on the observation form which is available in the Counseling Office. The completed observation forms must be submitted to Records and Registration along with your application for Validation.
- 4. **Other Program requirements:** (a) Current CPR certification (for the Professional Rescuer) is required for admission to the clinical sequence. CPR currency must be maintained throughout the program. (b) Submit a completed Health Appraisal Form which requires a negative TB test. (c) Submit evidence of Hepatitis B immunization **OR** signed waiver form provided during orientation.
- 5. If you are anticipating pursuing a Bachelors Degree, BIO 152 and 153 are required for most transfer programs.
- 6. Radiography Program courses are offered during the day and must be taken together in the sequence shown. Clinical Education courses are conducted primarily during daytime hours; however, off-shifts (second and third shifts) may be assigned to meet course objectives.
- 7. You must achieve a "C" (2.0) minimum grade in each Radiography course to be eligible to continue in and graduate from the Program. You must comply with all Radiography Program Progression and Retention Policies (copies available from the Health Programs counselor or program faculty.)
- 8. In addition to tuition, fees, and textbook costs, you must purchase uniforms, name tags, and clinic shoes; provide your transportation to clinic settings; pay for meals, parking fees, and any medical treatment which may become necessary.
- 9. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 10. Delta College reserves the right to modify program requirements.
- 11. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

See also "Dual Degrees"

# REFRIGERATION, HEATING, AIR CONDITIONING SERVICE TECHNOLOGY

Career Pathway + Engineering/Manufacturing  
and Industrial Technology

## Advanced Certificate

This program will provide you education and skill training for service technicians in the Refrigeration, Heating, and Air Conditioning Service Industry. Technicians on the job are needed to test, troubleshoot, repair, install, and sell the wide range of mechanical and electrical appliances and components in this field. Advanced education at the Associate Degree level is available to you at a neighboring college.

	Sem	Hrs
General Education Course		
ENG - - - Any Approved College Composition I Course .....	3/5	
<b>SUBTOTAL</b>	<b>3/5</b>	

Technical Courses		
2* CED 280D Cooperative Education: Mechanical Technology ..	1	
RHA 121 Fundamentals of Refrigeration & A/C .....	3	
RHA 122 Refrigeration & A/C Service I .....	3	
RHA 123 Commercial Refrigeration I .....	3	
RHA 124 Refrigeration & A/C Service II .....	3	
RHA 125 Commercial Refrigeration II .....	3	
RHA 135 Heating System Fundamentals .....	3	
RHA 136 Heating Service Fundamentals .....	3	
RHA 140 Applied Electricity I OR SKET 106 .....	3	
RHA 142 Sheetmetal I OR SKMT 171 .....	2	
RHA 150 Refrigerant Certification .....	1	
<b>SUBTOTAL</b>	<b>28</b>	
<b>TOTAL CREDITS REQUIRED FOR CERTIFICATE</b>	<b>31/33</b>	

### NOTATIONS:

1. Prior to enrollment, you must have an ASSET score of 38 (Elementary Algebra), 31 (Intermediate Algebra, or 28 (College Algebra) or an ACT score of 19 in Math, or Compass score of 41. You are advised to take MTH 097 if your algebra skills are weak.
2. In a laddered program, CED 280D is only required to be taken one time.
3. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
4. Delta College reserves the right to modify program requirements.





## RESIDENTIAL CONSTRUCTION

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### Associate in Applied Science Degree/ Advanced Certificate

The Certificate Program is designed to prepare you for jobs in rough carpentry and house framing with the skills you have learned in such areas as: job specifications and drawings, building materials, use of woodworking and surveying tools, cost estimations, concrete work, and exterior finishing. Completion of this program preempts years of apprenticeship in the construction field. You may become self-employed or find employment with a contractor or in a building supply center.

In addition to skills gained from courses completed in the Residential Construction Certificate Program, students completing the Associate degree will have learned construction techniques in interior trim, cabinet making and installation, equipment installation, and interior finishing. The Program also offers the breadth of education necessary for a successful self-employed business or lumberyard management and has the support of the home builders association.

	Sem Hrs
General Education Courses	
ENG --- Any Approved College Composition I Course .....	3/5
ENG 113 Technical Communications OR	
ENG --- Any Approved College Composition II Course .....	3/5
LW 220 Lifelong Wellness .....	1
LW --- Any Approved Lifelong Wellness Requirement .....	1
* POL --- Any Approved American Government Requirement .....	3/4
PSY 101 Applied Psychology OR	
PSY 211 General Psychology .....	3/4
<b>SUBTOTAL</b>	<b>14/20</b>

#### Technical Requirements

> RC 101 Construction Print Interpretation .....	3
ARC 101 Materials and Methods of Construction OR	
RC 102 Building Materials .....	3
> RC 104 Construction Laboratory I .....	3
ARC 221 Site Preparation OR	
RC 105 Building Site Surveying .....	3
> RC 106 Concrete and Foundations .....	3
> RC 108 Construction Safety .....	2
ARC 105 Architectural Drafting I OR	
RC 109 Residential Drafting .....	4
>*RC 114 Framing Square .....	4
> RC 200 Construction Contracting Rules and Regulations .....	3
> RC 201 Rough Framing and Outside Finishing .....	4
ARC 204 Estimating Building Construction OR	
RC 202 Building Materials Estimation .....	3
> RC 203 Construction Laboratory II .....	2
> RC 204 Inside Finishing and Hardware .....	4
RC 205 Cabinet Making and Millwork .....	5
ARC 111 Mechanical and Electrical Systems for Buildings .....	3
ARC 211 Elements of Structural Design OR	
RC 211 Elements of Structural Design .....	2
> ARC 251 History of Architecture OR	
> ART 251 History of Architecture .....	2
1* CED 280C Cooperative Education: Construction Technology ...	1
<b>SUBTOTAL</b>	<b>55</b>
<b>TOTAL CREDITS REQUIRED/ASSOCIATE DEGREE</b>	<b>68/75</b>
<b>TOTAL CREDITS REQUIRED/CERTIFICATE</b>	<b>29</b>

> **CERTIFICATE OPTION** - A Certificate will be awarded when you successfully complete courses preceded by a greater than sign ">".

#### NOTATIONS:

\* A "C" (2.0) minimum grade is required in each asterisked course.

1. In a laddered program, CED 280C is only required to be taken one time.
2. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
3. Delta College reserves the right to modify program requirements.
4. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Students that  
Experience

**the Delta  
Difference**

"I choose Delta because of the affordability and location. My classes are all designed to transfer. I will succeed because of Delta."

*Trisha Knoehel, Bay City*

# RESPIRATORY CARE

## Career Pathway ♦ Health Science

### Associate in Applied Science Degree

As a Registered Respiratory Therapist you will be qualified to assume primary clinical responsibility for all respiratory care modalities, including responsibilities involved in the supervision of certified respiratory therapist functions. The registered therapist is also capable of serving as a resource person to the physician with regard to current practices in respiratory care and to the hospital staff regarding effective and safe methods for administering respiratory care. Respiratory Therapists who have a certificate of completion from an AMA-approved therapist training program, a minimum of 62 college credits, and six months of experience following completion of the program are eligible to apply for registration by the National Board for Respiratory Care (NBRC). The process consists of two written exams and clinical simulation. Applicants must pass all three to be awarded the Registered Respiratory Therapist (RRT) credential. This is a suggested enrollment sequence for full time students. It is suggested that part time students see an advisor for scheduling assistance.

	Sem	Hrs
General Education Courses		
1 *BIO 140 Essentials of Human Anatomy & Physiology .....	5	
OR		
3+*BIO 152 Anatomy & Physiology I AND .....	(4)	
3+*BIO 153 Anatomy & Physiology II .....	(4)	
OR		
3+BIO 240 Human Anatomy AND .....	(4)	
3+BIO 241 Physiology .....	(4)	
* ENG --- Any Approved College Composition I Course .....	3/5	
* ENG --- Any Approved College Composition II Course .....	3/5	
3+*HSC 105 Medical Terminology .....	2	
* LW 220 Lifelong Wellness .....	1	
* LW --- Any Approved Lifelong Wellness Requirement .....	1	
* POL --- Any Approved American Government Requirement .....	3/4	
3+*RT 100 Basic Sciences for Respiratory Care .....	2	
* PHL 215 Health Care Ethics OR		
* PSY 101 Applied Psychology OR		
* PSY 211 General Psychology OR		
* SOC 211 Principles of Sociology OR		
* SOC 245 Death Education OR		
* SPH 112 Fundamentals of Oral Communication .....	3/4	
<b>SUBTOTAL</b>	<b>23/32</b>	

Application to the professional phase of this program may be made after successfully completing ("C" or better) all courses under General Education that are preceded by a plus sign "+"; however, it is strongly recommended that the rest of the General Education courses be completed prior beginning your clinical sequence.

#### Clinical Course Sequence

##### First Semester (Fall)

* RT 117 Basic Respiratory Care I .....	3
* RT 118 Basic Respiratory Care II .....	3
* RT 121 Orientation to RC as a Profession .....	2
* RT 126 Clinical Education I .....	3
* RT 131 Artificial Airway Care and Manual Ventilation .....	2
<b>SUBTOTAL</b>	<b>13</b>

##### Second Semester (Winter)

* RT 132 Adult Ventilatory Care .....	3
* RT 135 Diagnostics and Special Procedures .....	4
* RT 146 Clinical Education 2 .....	6
* RT 149 Clinical Education 2 Seminar .....	1
<b>SUBTOTAL</b>	<b>14</b>

##### Third Semester (Spring)

* RT 150 Cardiovascular Evaluation and Monitoring .....	3
<b>SUBTOTAL</b>	<b>3</b>

Fourth Semester (Fall)		
* RT 207 Cardiopulmonary Pathophysiology .....	3	
* RT 211 Advanced Cardiopulmonary Physiology .....	3	
* RT 212 Advanced Ventilator Management .....	2	
* RT 214 Seminar I .....	1	
* RT 216 Rehabilitation and Home Care .....	1	
* RT 226 Clinical Education 3 .....	6	
* RT 229 Clinical Ed 3 Seminar .....	1	
<b>SUBTOTAL</b>	<b>17</b>	

##### Fifth Semester (Winter)

* RT	231	Maternal and Neonatal Respiratory Care .....	2
* RT	234	Seminar 2 .....	1
* RT	240	Advanced Respiratory Care Pharmacology .....	3
* RT	244	Optional Rotation/Special Project .....	1
* RT	246	Comprehensive Clinical Education .....	8
		<b>SUBTOTAL</b>	<b>15</b>

**TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 85/94**

#### NOTATIONS:

\* A "C" (2.0) minimum grade is required in each asterisked course.

1. Prior to enrolling in BIO 152, you must either pass the BIO 130 (Introductory Chemistry and Cell Biology). The content of the challenge exam reflects those areas of study usually found in high school biology and chemistry. A copy of the objectives being tested is available to review in the Counseling Center.
2. A maximum of 15 students will be accepted each Fall Semester for Respiratory Care courses from qualified students who have been assigned a "semester and year of validation." You will be placed on this list only **after** successfully completing the prerequisite qualifications and submitting a "Validation Application for Health Clinical Program" to Records and Registration. The procedures for application into the Respiratory Care Program are on page 28 of this catalog and are available in the Counseling Office.
3. Prerequisite qualifications are: (a) high school graduate or GED equivalent (b) be admitted to Delta College; (c) provide transcripts from high school and all other colleges attended; and (d) completion with a "C" (2.0) minimum grade in each: RT 100, HSC 105, and BIO 140 (or BIO 152 & 153, or BIO 240 & 241).
4. Prior to enrollment in RT 100, you must have good basic algebra skills. You are advised to take MTH 097 if your algebra skills are weak.
5. After you receive notification of acceptance for the Fall Semester, you must have a complete physical examination including a negative TB test.
6. RT courses are offered day hours only and generally must be taken together in the sequence shown. You must achieve a minimum "C" (2.0) grade in each RT course to be eligible to continue in the Program.
7. In addition to tuition and textbook costs, you must purchase a laboratory coat, protective eye wear, name tag, provide your own transportation to clinical settings (plus possible hospital parking charges), and purchase three Self-Assessment Exams (total cost approximately \$150) during the final semester in the Program.
8. Admission to and continuance in the Program is contingent upon your compliance with all policies contained in the Respiratory Care Student Handbook.
9. If you have prior respiratory therapy work experience, you may be eligible to waive or receive equivalent credit for some RT courses.
10. Student Re-entry procedures are printed in the handbook given to all clinical students.
11. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
12. Delta College reserves the right to modify program requirements.
13. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Also see "Dual Degrees"



## SKILLED TRADES

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

### OPTIONS:

CARPENTER	PIPEFITTER
ELECTRICIAN	PLUMBING-PIPEFITTER
JOBGING MOLDER	STATIONARY BOILER ENGR.
MACHINE BUILDER	TINSMITH
MACHINE REPAIR	TOOL/DIEMAKER
MILLWRIGHT	TOOL HARDNER
PATTERN MAKER	

### Associate in Applied Science Degree

As an apprentice, you may apply your related training towards an Associate in Applied Science Degree. In addition to the degree requirements listed below, the following requirements must also be met: 1. Successful completion of all courses listed in a specific related training program (33-45 credits). 2. Successful completion of appropriate supportive study elective courses. Supportive electives are courses taken to fit your individual needs. Prior academic course work may be acceptable. Assistance in selecting electives is available from a Delta College counselor familiar with technical career programs. 3. **Receipt of a journeyman card or equivalent approved trade experience.**

	Sem	Hrs
General Education Courses		
ENG --- Any Approved College Composition I Course AND ....	3/5	
ENG --- Any Approved College Composition II Course OR		
ENG 113 Technical Communications .....	3/5	
OR		
OAT 151 Business Communications I AND .....	(3)	
OAT 152 Business Communications II .....	(3)	
LW 220 Lifelong Wellness .....	1	
LW --- Any Approved Lifelong Wellness Requirement .....	1	
POL --- Any Approved American Government Requirement .....	3/4	
# --- Suggested Electives .....	9/18	
<b>SUBTOTAL</b>	<b>20/29</b>	

#### Related Training Options:

(See the following for listing of specific courses for each program)	
Carpenter (Building Trades) .....	32
Electrician (Industrial) .....	39
Jobbing Molder .....	38
Machine Builder .....	45
Machine Repair .....	40
Millwright .....	38
Pattern Maker .....	42
Pipefitter (Industrial Maintenance) .....	40
Plumber - Pipefitter .....	39
Stationary Boiler Engineering .....	41
Tinsmith .....	40
Tool/Die Maker .....	39
Tool Hardner .....	41

**TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/63**

#### # Suggested Supportive Electives

Economics Courses (ECN)  
General Management Courses (MGT)  
Industrial Supervision Courses (IS)  
Mechanical Technology Courses (MT)  
Psychology Courses (PSY)

#### NOTATIONS:

1. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
2. Delta College reserves the right to modify program requirements.
3. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

## Apprenticeship Trade Related Instruction Programs

Delta College offers required Trade Related Instruction Programs for apprentices and up-graders in the industrial trades, building trades, and maintenance trades from the tri-county and surrounding areas. Trade Related Instruction Programs are designed with the cooperation of industry and provide the instruction to strengthen the theoretical knowledge in each trade area. The combination of related instruction and on-the-job experience is essential in order to provide a complete program to train skilled personnel for the trades. Courses are offered during the evening only. The scheduling and registration for courses is the responsibility of the Skilled Trades Department; therefore, any inquiry about a particular class should be made **directly** to them by phoning (989) 686-9437 or 686-9530.

Since many company apprenticeship programs are registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, it is imperative that the registration for these courses be coordinated by the local plant apprenticeship coordinator and the College Skilled Trades Department. All Trade Related Instruction is subject to change per agreement with the participating employer and Delta College. Delta College does not issue a journeyman's card only a completion certificate.

The following programs are representative of typical Trade Related Instruction Programs Delta College offers in conjunction with area employers. Employers, however, are not restricted to just these programs and many elect to modify our programs to meet their specific needs. Employers desiring more information on Delta's Trade Related Instruction Program should call the Skilled Trades Program Manager at (989) 686-9530 or 686-9437.

**The Journeyman's card is issued by the sponsoring employer not Delta College.**

Also see previous column for Associate in Applied Science Degree requirements for Skilled Trades Programs.

#### Trade Related Instruction Programs:

##### Carpenter (Building Trades)

Course No.	Course Title	Credit Hrs.	Clock Hrs
SKCT111	Construction Print Interpretation ....	3	45
SKCT102	Building Materials .....	3	45
SKCT114	Framing Square .....	4	60
SKCT105	Building Site Surveying .....	3	45
SKCT106	Concrete and Foundations .....	4	75
SKCT201	Rough & Outside Finishing Framing ..	4	90
SKCT204	Inside Finishing and Hardware .....	3	75
SKCT205	Cabinet Making and Millwork .....	5	105
SKWL101	Fuel Gas Welding and Cutting .....	3	45
<b>Totals</b>		<b>32</b>	<b>585</b>

##### Electrician (Industrial)

Course No.	Course Title	Credit Hrs.	Clock Hrs
SKMA111	Applied Integrated Electrical Math. I ..	6	90
SKMA112	Applied Integrated Electrical Math. II ..	3	45
SKMA113	Applied Integrated Electrical Math. III ..	3	45
SKEL111	Conventional Controls .....	3	45
SKEL101	Basic Electronics .....	6	90
SKEL102	Industrial Electronics .....	4	60
SKEL131	AC/DC Machinery .....	3	45
SKEL121	Advanced Controls I .....	5	75
SKEL122	Advanced Controls II .....	4	60
SKEL141	Industrial Electrical Code & Standards .....	3	45
<b>Totals</b>		<b>40</b>	<b>600</b>

CONTINUED

**Jobbing Molder**

Course No.	Course Title	Credit Hrs	Clock Hrs
SKDR101	Combined Drawing & Blueprint Rdg	4	60
SKDR111	Drawing II	3	45
SKDR131	Pattern Design	3	45
SKMA101	Mathematics I	2	30
SKMA102	Mathematics II	4	60
SKMA103	Mathematics III	4	60
SKMT111	Metals	3	45
SKMT231	Fundamentals of Foundry Technology	3	45
SKPH101	Applied Physics	4	60
SKTR181	Machine Tools I	2	30
SKTR182	Machine Tools II	3	45
SKTR183	Machinery Handbook	3	45
<b>Totals</b>		<b>38</b>	<b>570</b>

**Machine Builder**

Course No.	Course Title	Credit Hrs	Clock Hrs
SKDR101	Combined Drawing & Blueprint Reading	4	60
SKMA101	Mathematics I	2	30
SKMA102	Mathematics II	4	60
SKMA103	Mathematics III	4	60
SKMT101	Hydraulics & Pneumatics I	3	45
SKMT114	Machine Tools	3	90
SKMT151	Power Transmission	3	45
SKMT161	Rigging	2	30
SKOT191	Machine Controls I	3	45
Elective Courses (Select 11 credit hours)			
SKMT102	Hydraulics & Pneumatics II	3	45
SKOT192	Machine Controls II	3	45
SKPT106	Pipefitters Handbook	3	45
SKTR183	Machinery Handbook	3	45
SKWL101	Fuel Gas Welding	2	30
SKWL111	Stick Welding	3	45
<b>Totals</b>		<b>45</b>	<b>675</b>

**Machine Repair**

Course No.	Course Title	Credit Hrs	Clock Hrs
SKDR101	Sketching & Blueprint Rdg	4	60
SKDR111	Drawing II	3	45
SKMA101	Mathematics I	2	30
SKMA102	Mathematics II	4	60
SKMA103	Mathematics III	4	60
SKMT101	Hydraulics and Pneumatics I	3	45
SKMT102	Hydraulics and Pneumatics II	3	45
SKMT111	Metals	3	45
SKMT161	Industrial Rigging and Safety	2	30
SKTR181	Machine Tools I	2	30
SKPH101	Applied Physics	4	60
SKTR182	Machine Tools II OR		
SKTR183	Machinery Handbook	3	45
SKCN160	Computer Numerical Controls I	3	45
<b>Totals</b>		<b>40</b>	<b>600</b>

**Millwright**

Course No.	Course Title	Credit Hrs	Clock Hrs
SKCT101	Industrial Millwright Procedures	3	45
SKDR101	Sketching and Blueprint Reading	4	60
SKMA101	Mathematics I	2	30
SKMA102	Mathematics II	4	60
SKMA103	Mathematics III	4	60
SKMT101	Hydraulics and Pneumatics I	3	45
SKMT151	Power Transmission	3	45
SKMT161	Industrial Rigging & Safety	2	30
SKMT171	Sheetmetal I	2	30
SKMT172	Sheetmetal II OR	3	45
SKMT102	Hydraulics and Pneumatics II	3	45
SKPH101	Applied Physics	4	60
SKWL101	Fuel Gas Welding & Cutting	3	45
SKWL104	Intro. to Shielded Metal Arc Welding OR	3	45
SKWL107	Intro. to GMAW/SMAW	3	45
<b>Totals</b>		<b>40</b>	<b>600</b>

**Pattern Maker**

Course No.	Course Title	Credit Hrs	Clock Hrs
SKCA114	Autocad Introduction	2	30
SKDR101	Sketching & Blueprint Rdg	4	60
SKDR111	Drawing II	3	45
SKDR131	Pattern Design	3	45
SKMA102	Mathematics II	4	60
SKMA103	Mathematics III	4	60
SKMT231	Fundamentals of Foundry Training	3	45
SKTR183	Machinery Handbook	3	45
SKCN160	Computer Numerical Controls I	3	45
SKTR161	Computer Numerical Controls II	3	45
Elective Courses (Select 10 credit hours)			
SKMT111	Metals	3	45
SKTR181	Machine Tools I	2	30
SKTR182	Machine Tools II	3	45
SKPH101	Applied Physics	4	60
SKDR121	Descriptive Geometry	3	45
<b>Totals</b>		<b>42</b>	<b>630</b>

**Pipefitter (Industrial Maintenance)**

Course No.	Course Title	Credit Hrs	Clock Hrs
SKDR101	Sketching and Blueprint Reading	4	60
SKDR141	Pipe and Tube Isometrics	3	45
SKMA101	Mathematics I	2	30
SKMA102	Mathematics II	4	60
SKMA103	Mathematics III	4	60
SKPH101	Applied Physics	4	60
SKPT101	Industrial Piping	4	60
SKWL101	Fuel Gas Welding	3	45
SKPT106	Pipefitters Handbook	3	45
SKPT121	Refrigeration and Air Conditioning	3	45
SKMT101	Hydraulics and Pneumatics I	3	45
SKMT102	Hydraulics and Pneumatics II	3	45
<b>Totals</b>		<b>40</b>	<b>600</b>

**Plumber-Pipefitter**

Course No.	Course Title	Credit Hrs	Clock Hrs
SKDR101	Sketching & Blueprint Reading	4	60
SKMA101	Mathematics I	2	30
SKMA102	Mathematics II	4	60
SKMA103	Mathematics III	4	60
SKMT101	Hydraulics and Pneumatics I	3	45
SKMT171	Sheetmetal	2	30
SKPH101	Applied Physics	4	60
SKPT101	Industrial Piping	4	60
SKPT106	Pipefitters Handbook	3	45
SKPT121	Refrigeration & Air Conditioning	3	45
SKWL101	Fuel Gas Welding & Cutting	3	45
SKWL104	Intro. to Shielded Metal Arc Welding	3	45
<b>Totals</b>		<b>39</b>	<b>585</b>

**Stationary Boiler Engineering**

Course No.	Course Title	Credit Hrs	Clock Hrs
SKDR101	Sketching and Blueprint Reading	4	60
SKDR141	Pipe and Tube Isometrics	3	45
SKMA101	Mathematics I	2	30
SKMA102	Mathematics II	4	60
SKMA103	Mathematics III	4	60
SKMT161	Industrial Rigging and Safety	2	30
SKPT106	Pipefitters Handbook	3	45
SKPT111	Stationary Boiler Engineering I	2	30
SKPT112	Stationary Boiler Engineering II	2	30
SKPT113	Stationary Boiler Engineering III	2	30
SKPT114	Stationary Boiler Engineering IV	3	45
SKPT121	Refrigeration & Air Cond.	3	45
SKWL101	Fuel Gas Welding and Cutting	3	45
SKWL104	Intro. to Shielded Metal Arc Welding	3	45
<b>Totals</b>		<b>40</b>	<b>600</b>



### Tinsmith

Course No.	Course Title .....	Credit Hrs	Clock Hrs
SKDR101	Sketching & Blueprint Reading .....	4	60
SKDR121	Descriptive Geometry .....	3	45
SKMA101	Mathematics I .....	2	30
SKMA102	Mathematics II .....	4	60
SKMA103	Mathematics III .....	4	60
SKMT161	Industrial Rigging & Safety .....	2	30
SKMT171	Sheetmetal I .....	2	30
SKMT172	Sheetmetal II .....	3	45
SKMT173	Sheetmetal III .....	3	45
SKPH101	Applied Physics .....	4	60
SKPT126	Air Movement & Duct Design .....	3	45
SKWL101	Fuel Gas Welding .....	3	45
SKWL104	Intro. to Shielded Metal Arc Welding OR .....	3	45
SKWL107	Intro. to GMAW/SMAW .....	3	45
<b>Totals .....</b>		<b>40</b>	<b>600</b>

### Tool/Die Maker

Course No.	Course Title .....	Credit Hrs	Clock Hrs
SKDR101	Sketching & Blueprint Reading .....	4	60
SKDR111	Drawing II .....	3	45
SKDR130	Tool & Die Design .....	4	60
SKMA101	Mathematics I .....	2	30
SKMA102	Mathematics II .....	4	60
SKMA103	Mathematics III .....	4	60
SKMT101	Hydraulics and Pneumatics I .....	3	45
SKMT111	Metals .....	3	45
SKPH101	Applied Physics .....	4	60
SKTR181	Machine Tool I .....	2	30
SKTR182	Machine Tool II .....	3	45
SKTR183	Machinery Handbook .....	3	45
<b>Totals .....</b>		<b>39</b>	<b>585</b>

### Tool Hardener

Course No.	Course Title .....	Credit Hrs	Clock Hrs
SKDR101	Sketching & Blueprint Reading .....	4	60
SKDR111	Drawing II .....	3	45
SKDR130	Tool & Die Design .....	4	60
SKMA101	Mathematics I .....	2	30
SKMA102	Mathematics II .....	4	60
SKMA103	Mathematics III .....	4	60
SKMT111	Metals .....	3	45
SKMT112	Ferrous Heat Treatment .....	2	30
SKPH101	Applied Physics .....	4	60
SKTR181	Machine Tools I .....	2	30
SKTR182	Machine Tools II .....	3	45
SKWL101	Fuel Gas & Cutting .....	3	45
SKWL104	Intro. to Shielded Metal Arc Welding .....	3	45
<b>Totals .....</b>		<b>41</b>	<b>615</b>



# SONOGRAPHY (DIAGNOSTIC MEDICAL)

## Career Pathway ♦ Health Science

### Associate in Applied Science Degree/ Advanced Certificate

Ultrasound is a diagnostic imaging modality that uses high frequency sound waves to obtain anatomical images of the abdominal, pelvic, fetus, and vasculature systems. A sonographer is a skilled health care professional who performs diagnostic ultrasound examinations under the direction of a physician. Sonographers use their knowledge of anatomy and physiology, pathology, and ultrasound physics in order to obtain quality images for interpretation. A sonographer must be proficient in problem solving, and possess the ability to extrapolate pertinent patient history along with supporting clinical data to facilitate optimum diagnostic results. Upon successfully completing this program, you are eligible to take the national certification examination administered by the American Registry of Diagnostic Medical Sonographers. This is a suggested enrollment sequence for full time students. It is suggested that part time students see an advisor for scheduling assistance.

	Sem	Hrs
General Education Courses		
>+BIO 140 Essentials of Anatomy and Physiology OR		
>+BIO 152 Human Anatomy & Physiology I AND		
>+BIO 153 Human Anatomy & Physiology II .....	4/8	
>+HSC 105 Medical Terminology .....		2
>+ENG --- Any Approved College Composition I Course .....		3/5
>+ENG 113 Technical Communication .....		3
>+PHY 101 Applied Physics OR		
>+PHY 111 General Physics I .....		4
* POL --- Any Approved American Government Requirement .....	3/4	
* PSY 101 Applied Psychology OR		
* PSY 211 General Psychology .....	3/4	
* SOC 211 Principles of Sociology .....		3
>+SPH 114 Interpersonal Communications .....		3
SUBTOTAL		31/43

Prior to attempting to register to begin the clinical sequence, you must complete the admission process for the DMS program. See notations.

#### Basic Program Requirements

##### First Semester

>+8 DMS 101 Introduction to Sonography .....	2
>+8 DMS 103 Introduction to Abdominal Sonography .....	3
>+8 DMS 104 Introduction to OB/GYN Sonography .....	2
>+8 DMS 105 Ultrasound Physics and Instrumentation I .....	2
>+8 DMS 106 Ultrasound Scanning .....	4
8 LW 206A Occupational Wellness I .....	1
SUBTOTAL	
	14

##### Second Semester

>+8 DMS 112 Small Parts Sonography .....	1	
>+8 DMS 113 Advanced Abdominal Sonography .....	1	
>+8 DMS 114 Advanced OB/GYN Sonography .....	2	
>+8 DMS 115 Ultrasound Physics and Instrumentation II .....	2	
<+8 DMS 116 Clinical Seminar I .....	.5	
>+8 DMS 117 Clinical Education I .....	5	
6 LW 206B Occupational Wellness II .....	.5	
SUBTOTAL		12

##### Third Semester

>+8 DMS 201 Introduction to Neurologic & Vascular Sonography ...	3	
>+8 DMS 202 Ultrasound Seminar I .....	4	
>+8 DMS 206 Clinical Seminar II .....	.5	
>+8 DMS 207 Clinical Education II .....	5	
6 LW 206C Occupational Wellness III .....	.5	
SUBTOTAL		13

#### Fourth Semester

>+8 DMS 212 Ultrasound Seminar II .....	4	
>+8 DMS 217 Clinical Education III .....	5	
SUBTOTAL		9
TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE		79/87
TOTAL CREDITS REQUIRED FOR CERTIFICATE		67/73

> **CERTIFICATE OPTION** - A Certificate will be awarded when you successfully complete courses preceded by a greater than sign ">".

#### NOTATIONS:

- \* A "C" minimum (2.0) grade is required in each asterisked course.
- +A "B" minimum (3.0) grade is required in each plus signed course.
- 1. A maximum of 20 students will be accepted each winter semester for the DMS courses. The procedure for application into the DMS program can be obtained from Counseling, Health and Wellness, or DMS Program Coordinator. You will be eligible to attempt to register for clinical courses only after successfully completing the DMS application and admission process.
- 2. **Prerequisite qualifications are:** Graduate of an accredited Allied Health program or completion of the following courses with a "B" (3.0) or better: BIO 140, or BIO 153 & BIO 154, HSC 105, any approved College Composition I Course, ENG 113, SPH 114, PHY 101 or PHY 111. If you are an allied health program graduate but the program did not include college level physics, you will still be required to take PHY 101 or PHY 111 with a "B" (3.0) or better. Medical Radiography Physics will meet this requirement.
- 3. **Program qualifications include:** (a) High school graduate or GED equivalent. (b) Be admitted to Delta College. (c) Provide transcripts from high school and other colleges attended.
- 4. **Other program requirements:** (a) Current CPR certification (for the Professional Rescuer) is required for admission to the clinical sequence. CPR currency must be maintained throughout the program. (b) Submit a completed Health Appraisal Form, which requires a negative TB test. (c) Submit evidence of Hepatitis B immunization or signed waiver form provided during orientation.
- 5. Math competency as demonstrated by a minimum score of 38 on the Asset, 41 on Compass, or 19 on the elementary algebra portion of the ACT, **OR** completion of MTH 097 with a "C" minimum grade.
- 6. Basic computer literacy skills or CST 103 or CST 106.
- 7. DMS program courses must be taken together in the sequence shown. Clinical Education courses are conducted primarily during day time hours; however, off-shifts (second & third shifts) may be assigned to meet course objectives.
- 8. You must achieve a "B" (3.0) minimum grade in each DMS course to be eligible to continue in and graduate from the DMS Program. You must comply with all DMS program progression and retention policies (copies available from the Health Programs counselor or DMS program coordinator).
- 9. If you have completed LW 220 and one of the approved LW electives, you need not take 206A, 206B, and 206C.
- 10. In addition to tuition, fees, and textbook costs, you must purchase uniforms, name tags, and clinical shoes; provide your transportation to clinical settings; pay for meals, parking fees, and any medical treatment which may become necessary.
- 11. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 12. Delta College reserves the right to modify program requirements.
- 13. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.



# SURGICAL FIRST ASSISTANT

Career Pathway + Health Science

## Associate in Applied Science Degree/ Advanced Certificate

This program offers an advanced level course of study for experienced and credentialed operating room professionals. The non-physician Surgical First Assistant (SFA) provides aid in exposure, hemostasis, and other technical functions that will help the surgeon carry out a safe operation with optimal results for the patient. These activities will be performed **only** as delegated tasks under the direct and immediate supervision of the responsible surgeon. **For more detailed information and application process, see <http://www.delta.edu/health/sfa.html>.** This is a suggested enrollment sequence for full time students. It is suggested that part time students see an advisor for scheduling assistance.

	Sem Hrs
General Education Courses	
>*BIO 152 Anatomy and Physiology I AND .....	4
>*BIO 153 Anatomy and Physiology II .....	4
OR	
>*BIO 240 Human Anatomy AND .....	(4)
>*BIO 241 Physiology .....	(4)
>*BIO 203 General Microbiology .....	4
ENG --- Any Approved College Composition I Course .....	3/5
ENG --- Any Approved College Composition II Course OR	
ENG 113 Technical Communication .....	3/5
* HSC 105 Medical Terminology .....	2
* HSC 140 Basic Medical Emergencies .....	2
LW 220 Lifelong Wellness .....	1
LW --- Any Approved Lifelong Wellness Requirement .....	1
POL --- Any Approved American Government Requirement .....	3/4
* PSY 101 Applied Psychology OR	
* PSY 211 General Psychology OR	
* SOC 211 Principles of Sociology OR	
* SOC 231 Cultural Anthropology .....	3/4
--- --- General Electives .....	2/3
SUBTOTAL	32/39

### Clinical Sequence

#### First Semester (Fall)

>* SFA 350 Advanced Surgical Anatomy I .....	3
>* SFA 351 Anesthesia and Surgical Pharmacology .....	2
>* SFA 352 Fundamental Techniques .....	5
SUBTOTAL	10

#### Second Semester (Winter)

>* SFA 360 Advanced Surgical Anatomy II .....	3
>* SFA 361 Applied Bioscience .....	3
>* SFA 362 Professional Conduct .....	1
>* SFA 365 Clinical Preceptorship I .....	3
SUBTOTAL	10

#### Third Semester (Spring)

>* SFA 370 Clinical Preceptorship II .....	7
>* SFA 371 Epidemiology and Research .....	3
SUBTOTAL	10

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 62/69

TOTAL CREDITS REQUIRED FOR CERTIFICATE 42

>**CERTIFICATE OPTION** - A Certificate will be awarded when you successfully complete courses preceded by a greater than sign ">".

### NOTATIONS:

\* A "C" (2.0) minimum grade is required in each asterisked course.

Prior to application for acceptance into the program, criteria 1-8 must be met.

1. Proof of certification currency as a Certified Surgical Technologist (CST), Certified Nurse-Operating Room (CNOR), or Physician Assistant-Certified (PA-C).
2. Three years full-time-equivalent operating room Scrub and/or First Assisting experience within the last five years as verified by employer(s).
3. Official college transcript(s) verifying eight semester credits of laboratory coursework in Anatomy and Physiology and a three credit laboratory course in Microbiology.
4. Computer literacy and the ability to use e-mail and the Internet.
5. Current references from **two** surgeons supporting the applicant's candidacy.
6. Current CPR/BLS certification, which includes a two-person resuscitation technique. CPR certification must be renewed annually.
7. Proof of personal liability insurance covering First Assisting activities. Policy on an occurrence basis with limits of \$1,000,000 per incident and \$3,000,000 in the annual aggregate. (Note: Such a policy is available to members of AST, AORN, and AAPA.)
8. Proof of a negative TB skin test and/or chest X-ray, and a current physical examination confirming you are free from communicable disease and capable of performing the duties necessary for the safe care of patients. It is highly recommended that you obtain Hepatitis B vaccination.
9. Enrollment in SFA courses is by instructor permission only.
10. You are responsible for paying the cost of any medical care that might be necessary if you are injured or become ill as a result of clinical practice activities. The College does not provide insurance coverage for such situations.
11. Reentry procedures are available through the Program Coordinator's office.
12. \$500 fee per SFA semester for Distance Learning.
13. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
14. Delta College reserves the right to modify program requirements.
15. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

# **SURGICAL TECHNOLOGY** Career Pathway ♦ Health Science

## **Associate in Applied Science Degree/ Advanced Certificate**

The Surgical Technologist's primary function is to provide a safe, therapeutically-effective environment for the surgical patient by assisting the surgeon and performing related services in the operating room. This program is accredited by CAAHEP and graduates will be eligible to sit for the National Certifying Exam. This is a suggested enrollment sequence for full time students. It is suggested that part time students see an advisor for scheduling assistance.

	Sem Hrs
General Education Courses	
>+*BIO 152 Anatomy and Physiology I AND .....	4
>+*BIO 153 Anatomy and Physiology II .....	4
OR	
+ BIO 240 Human Anatomy AND .....	(4)
+ BIO 241 Physiology .....	(4)
>+*BIO 203 General Microbiology .....	4
ENG --- Any Approved College Composition I Course .....	3/5
ENG --- Any Approved College Composition II Course .....	3/5
>+*HSC 105 Medical Terminology .....	2
>+*HSC 140 Basic Medical Emergencies .....	2
LW 220 Lifelong Wellness .....	1
LW --- Any Approved Lifelong Wellness Requirement .....	1
POL --- Any Approved American Government Requirement .....	3/4
>+*PSY 101 Applied Psychology OR	
>+*PSY 211 General Psychology OR	
>+*SOC 211 Principles of Sociology OR	
>+*SOC 275 Sociology of Stress .....	3/4
>+*ST 100 Introduction to Health Care Service .....	3
<b>SUBTOTAL</b>	<b>33/39</b>

Application to the clinical phase of this program may be made after successfully completing with a "C" or better all courses under General Education that are preceded by a plus sign "+".

Clinical Courses	
First Semester (Fall)	
>* ST 107 Pharmacology in the Operating Room .....	2
>* ST 110 The Surgical Patient .....	2
>* ST 120 Fundamentals of Surgical Technology .....	6
>* ST 130 Surgical Anatomy .....	4
>* ST 140 Operative Procedures .....	4
<b>SUBTOTAL</b>	<b>18</b>

First Semester (Winter)	
>* ST 200 Clinical Externship .....	12
>* ST 201 Operating Room Seminar .....	3
<b>SUBTOTAL</b>	<b>15</b>
<b>TOTAL CLINICAL</b>	<b>33</b>

**TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 66/72**  
**TOTAL CREDITS REQUIRED FOR CERTIFICATE 55**

> **CERTIFICATE OPTION** - A Certificate will be awarded when you successfully complete courses preceded by a greater than sign ">".

### **NOTATIONS:**

- \* A "C" (2.0) minimum grade is required in each asterisked course.
- 1. As an applicant, you must be a high school graduate or submit a GED equivalency certificate.
- 2. Math skills through MTH 097 Algebra I are a must for you in this program.
- 3. Prior to enrolling in BIO 152 you must either pass the BIO 130 challenge exam or successfully complete BIO 130 (Introductory Chemistry and Cell Biology). The content of the challenge exam reflects those areas of study usually found in high school biology and chemistry. A copy of the objectives being tested is available to you for review in the Counseling Center.
- 4. **Application:** The procedures for application into the clinical portion of the Surgical Technology Program are on page 28 of this catalog and are available in the Counseling Center.
- 5. **PRIOR** to beginning clinical, you **MUST** have CPR certification, which includes the Two Person Rescuer Technique. CPR certification must be renewed annually.
- 6. Once accepted, you must have a negative TB skin test and/or chest X-ray and a current physical examination which confirms you are free from communicable disease and capable of performing the duties necessary for the safe care of patients. It is highly recommended that you obtain Hepatitis B vaccination.
- 7. You must achieve a minimum of "C" (2.0) grade in each clinical course to be eligible to continue in this program. These courses must be taken in the sequence shown and enrollment in these courses is by permission only.
- 8. When in the clinical phase of the program, you must have transportation available as sites may not be in your community.
- 9. There will be additional uniform expenses that will be explained at the Orientation to the Clinical.
- 10. You are responsible for paying the cost of any medical care which might be necessary if you are injured or become ill as a result of clinical practice activities. The College does not provide insurance coverage for such situations.
- 11. Student Re-entry procedures are printed in the handbook given to all clinical students.
- 12. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
- 13. Delta College reserves the right to modify program requirements.
- 14. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

**Also see "Dual Degrees"**



## WATER ENVIRONMENT TECHNOLOGY

Career Pathway ♦ Natural Resources and  
Agriscience

### Associate in Applied Science Degree

The vast majority of water and wastewater treatment plant operators work for local governments. You may work for private water supply and sanitary services companies, many of which provide operation and management services to local governments on a contract basis.

Graduation from this program will prepare you to make application to write the Wastewater Class "D" Operator Certification examination and the entry-level waterworks certification examinations.

	Sem Hrs
<b>General Education Courses</b>	
BIO 110 Environmental Science .....	4
>1CHM 105 Technical Chemistry I AND .....	5
CHM 106 Technical Chemistry II (recommended sequence) .....	5
OR	
1 CHM 111 General and Inorganic Chemistry I AND .....	(4)
1 CHM 112 General and Inorganic Chemistry II .....	(4)
> CST 133 Introduction to Computer Information Technology OR	
> CST 132 Computer Literacy on the Macintosh .....	4/3
ENG --- Any Approved College Composition I Course .....	3/5
ENG 113 Technical Communications (recommended) OR	
ENG --- Any Approved College Composition II Course .....	3/5
LW 220 Lifelong Wellness .....	1
LW --- Any Approved Lifelong Wellness Requirement .....	1
>MTH 119 Intermediate Algebra OR MTH119A .....	4
POL --- Any Approved American Government Requirement .....	3/4
<b>SUBTOTAL</b>	<b>30/38</b>
<b>Basic Program Requirements</b>	
> WET 110 Water Treatment Technologies .....	3
> WET 112 Wastewater Treatment Technologies .....	3
> WET 210 Advanced Wastewater Treatment Technology .....	4
> WET 212 Advanced Water Treatment Technologies .....	4
> WET 220 Water Quality Analysis and Microbiology .....	4
WET 230 Water/Wastewater Utility Management .....	3
WET 240 Applied Hydraulics .....	3
> WET 244 Water/Wastewater Utility Equipment Maintenance .....	3
WET 246 Water/Wastewater Utility Electrical Maintenance .....	3
WET 265 Practicum in Water/Wastewater Treatment .....	4
<b>SUBTOTAL</b>	<b>34</b>
<b>Recommended Electives</b>	
2 ENV 100 Environmental Regulations .....	3
2 ENV 151 HAZWOPER Training .....	2.7
2 ENV 153 Confined Space Training .....	1.3
2 GLG 130 Environmental Geology .....	4
2 GLG 230 Introductory Field Methods in Hydrogeology .....	2

TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE 64/72

#### NOTATIONS:

1. A student must take the sequence of CHM 105 and 106 or the sequence of CHM 111 and CHM 112 to meet program requirements.
2. A student not wishing to take the Michigan Department of Environment Quality Water and Wastewater Entry-Level Exams may replace WET 265 with one of the recommended electives or an elective approved by the Science Division Chair or the Program Chair to complete at least 64 credits.
3. This requirement can also be met with an acceptable score on the current college assessment instrument. To meet minimum graduation requirements, credits can be replaced from the elective list above.
4. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
5. Delta College reserves the right to modify program requirements.
6. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

## WEB MASTER

Career Pathway ♦ Arts and Communications

### Advanced Certificate

This program is designed to give you a basic understanding of internet web page development, design considerations and tools, e-commerce and hands on experience. Technical competency prepares you with the operational tools to design and maintain web pages for a wide variety of businesses.

	Sem Hrs
<b>Basic Program Requirements</b>	
ART 115 Basic Design Two Dimensional OR	
PHO 100 Elements of Color Photography .....	3
ART 271 Digital Imaging: Photo-shop .....	3
CST 103 Windows Foundations .....	1
CST 106 Internet Foundations .....	1
CST 110 Basic Web Page Development .....	1
CST 114 JavaScript Programming .....	1
CST 115 e-Commerce Concepts .....	3
CST 133 Introduction to Computer Information Technology .....	4
CST 210 Advanced Web Page Development .....	2
CST 216 Web Site Management .....	3
EM 285 Electronic Media Capstone .....	4
PHL 205 Media Ethics and Law .....	3
<b>TOTAL CREDITS REQUIRED FOR CERTIFICATE</b>	<b>29</b>

#### NOTATIONS:

1. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
2. Delta College reserves the right to modify program requirements.
3. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

# WELDING ENGINEERING TECHNOLOGY

Career Pathway ♦ Engineering/Manufacturing  
and Industrial Technology

## Associate in Applied Science Degree/ Advanced Certificate

The program combines specialized welding training with related technical and general education courses. The Associate degree program meets the educational requirements necessary to pursue a baccalaureate degree in a variety of welding related careers. Students should contact Counseling or the Welding Staff for career or transfer information.

	Sem	Hrs
General Education Courses		
ENG --- Any Approved College Composition I Course .....	3/5	
ENG --- Any Approved College Composition II Course .....	3/5	
LW 220 Lifelong Wellness .....	1	
LW --- Any Approved Lifelong Wellness Requirement .....	1	
MTH --- Any Approved Intermediate Algebra Course ..	4/6	
MTH 121 Plane Trigonometry .....	3	
PHY 111 General Physics I .....	4	
POL --- Any Approved American Government Requirement .....	3/4	
SPH 112 Fundamentals of Oral Communication .....	3	
SUBTOTAL		25/32

Technical Courses		
CAD 114 AutoCad Introduction .....	2	
> MFG 111 Manufacturing Processes .....	3	
> WELD103 Fuel Gas Welding and Cutting .....	3	
> WELD111 Welding Metallurgy .....	3	
> WELD 114 Shielded Metal Arc Structural and Tank .....	8	
> WELD 120 Beginning Industrial Blueprint Reading .....	2	
> WELD 122 Blueprint Reading for Welders and Fabricators .....	2	
> WELD 220 Weld Qualification - Plate .....	4	
> WELD 224 Shielded Metal Arc Welding Pipe .....	8	
> WELD 226 Gas Tungsten Arc Welding .....	6	
> WELD 235 Gas Metal Arc Welding .....	6	
SUBTOTAL		47
TOTAL CREDITS REQUIRED FOR ASSOCIATE DEGREE		72
TOTAL CREDITS REQUIRED FOR WELDING TECHNOLOGY CERTIFICATE		45

### WELDING TECHNOLOGY

> **CERTIFICATE OPTION:** A certificate will be awarded when you successfully complete courses preceded by greater than ">" sign.

### NOTATIONS:

1. For complete program description and details, please call the Industry Education Center at (989) 496-3368 or 496-3373.
2. WELD courses are taught at the Industry Education Center, Midland, Michigan.
3. File an application for an associate or dual degree and/or certificate with the Records and Registration Office by mid-semester of the final semester of your course work. See page 96 for other graduation requirements.
4. Delta College reserves the right to modify program requirements.
5. If you plan to pursue an advanced degree, see pages 22-25 for special transfer agreements.

Also see "Manufacturing Technology"







## Non-Degree Programs and Activities

Program/Activity	Code	Academic Credit	Credit-Free (Non-Academic)	Division/Department	Phone Number
Apprenticeship Trade Related Instruction:				Corporate Services	686-9530
Carpenter (Building Trades)	AAS.60891	X		Corporate Services	686-9530
Electrician (Industrial)	AAS.60891	X		Corporate Services	686-9530
Jobbing Molder	AAS.60891	X		Corporate Services	686-9530
Machine Builder	AAS.60891	X		Corporate Services	686-9530
Machine Repair	AAS.60891	X		Corporate Services	686-9530
Millwright	AAS.60891	X		Corporate Services	686-9530
Pattern Maker	AAS.60891	X		Corporate Services	686-9530
Pipefitter (Industrial Maintenance)	AAS.60891	X		Corporate Services	686-9530
Plumber-Pipefitter	AAS.60891	X		Corporate Services	686-9530
Stationary Boiler Engineering	AAS.60891	X		Corporate Services	686-9530
Tinsmith	AAS.60891	X		Corporate Services	686-9530
Tool/Die Maker	AAS.60891	X		Corporate Services	686-9530
Tool Hardener	AAS.60891	X		Corporate Services	686-9530
CDA Child Development Training	XX.50000		X	Non-Credit	686-9515
Children's Programs	XX.50000		X	Non-Credit	686-9185
Computer Instruction-Home & Business	XX.50000		X	Non-Credit	686-9515
Dance	XX.50000		X	Non-Credit	686-9515
Dog Obedience Training	XX.50000		X	Non-Credit	686-9515
Electrical & Plumbing	XX.50000		X	Non-Credit	686-9515
Floriculture Training Program	XX.50000		X	Non-Credit	686-9515
Health Unit Coordinator/Ward Clerk	XX.50000		X	Non-Credit	686-9415
Insurance/Billing I	XX.50000		X	Non-Credit	686-9415
Interior Decoration	XX.50000		X	Non-Credit	686-9515
Nurse Refresher	XX.50000		X	Non-Credit	686-9415
Personal Computers Business Applications			X	Corporate Services	758-3621
Phlebotomist Program	XX.50000		X	Non-Credit	686-9415
Quality & Productivity Improvement			X	Corporate Services	758-3636
Real Estate	XX.50000		X	Non-Credit	686-9515
Stationary Boiler Operator	XX.50000		X	Non-Credit	686-9515
Travel Agent Training Program	XX.50000		X	Non-Credit	686-9515

- Midland Callers - Please call 495-4000 and the last four numbers of the above listed numbers. Frankenmuth, Reese, Birch Run and Vassar please call 758-3400
- You will find more information on these programs and activities in either the Corporate Services Training Schedule booklet or Non-Credit Schedule of Classes. Both are published each semester (three times per year).

Delta College offers a variety of courses and programs designed to meet the needs of the diverse communities it serves through credit and non-credit courses. These courses and programs do not lead to a degree or Certificate, but are designed to fill a need identified by an individual or groups of individuals. You will find non-credit classes are enriching and challenging and assist an individual with his/her personal or professional development without the pressure of tests, in most instances.

Delta views education as a lifelong process that takes place in a wide variety of environments. These courses and programs are offered throughout the community college district wherever the need exists, adequate facilities are available, and enrollment justifies their being offered. Courses are taught on the Campus, in public schools, in industrial plants, in commercial office buildings, at Delta College Centers and at other suitable locations. The length and frequency of courses differ and are determined by the type and objectives of each course.

The College maintains close liaison with, and is assisted by, program advisory committees; professional, civic and church organizations; governmental agencies; business; the labor industry; and other groups in determining needs and providing education and training to the community.

The credit programs and courses are offered through our 8 academic divisions and Corporate Services. Non-credit programs are primarily offered through the eight divisions and through Corporate Services.

The credit courses are included in the Schedule of Academic Classes booklet or Skilled Trades Schedule each semester. The non-credit programs and courses are listed in a separate schedule booklet each semester.

**Financial Aid for Non-Credit Courses:** Financial aid for students enrolling for certain non-credit courses may be available. It is intended for individuals who are supported by some type of public assistance or those employed at a low income level. Students must be residents of Bay, Midland, or Saginaw Counties. Funds are limited.

Requests for aid should be made prior to expected enrollment.

*\* If aid is awarded, the balance must be paid by the student at the time of registration. Students are responsible for course fees, books, supplies, and materials.*

## Programs and Activities (Non-Academic Credit)

### CDA Child Development Training

This course is for persons interested in becoming credentialed in Child Development (CDA) and will prepare you to apply for the National Assessment for CDA.

### Computers

A program of study from beginning to advanced levels.

- \* Windows
- \* Excel & Access
- \* Office 97
- \* PowerPoint
- \* Internet & Web Pages
- \* Computer Graphics
- \* Mail Merge

### Electrical & Plumbing

Learn the applied fields of electricity and plumbing at the basic levels.

### Floriculture Training Program

This Floriculture Program will consist of a two semester certificate program. The first course of study will be offered in the fall and the second course of study will consist of eight weeks of classroom and an internship of seven weeks in winter semester.

The purpose of this program is to prepare students for a career as a professional florist in the floral industry. The program will be conducted through a combination of classroom lecture, handouts, textbook, laboratories and field experiences. Skills offered will include: design techniques, flower and foliage identification and care, sales and marketing, and display techniques. Course will be a stepping stone to prepare students to take the Michigan Certified Florist exam.

### Children's Programs

Various programs strive to meet the individual academic, social, and emotional needs of children. This is an enrichment program that enhances, and extends learning opportunities for children ages two to eighteen.

### Health Unit Coordinator (offered each semester)

The Health Unit Coordinator (HUC) is a highly respected member of the health care team. He or she assumes a great deal of responsibility in providing non-direct patient care in a fast-paced environment. Other titles by which the HUC may be known are ward clerk or unit secretary. As an integral part of the team, the Health Unit Coordinator performs clerical duties, interacts on an ongoing basis with staff and visitors, transcribes medical orders, and inputs data into the agency computer system. Course consists of 96 hours of theory and 160 hours of clinical experience. Prerequisites: High school diploma or GED, COMPASS assessment scores of 38 in writing, 81 in reading, and 26 in math on pre-algebra. Please call 686-9415 if you have any questions, to receive an information packet and have your name placed on the interest list. Starting salary: \$8-9.50.

### Interior Decoration

Teaches interior design skills and may provide entry-level job skills. You will learn the basics of design; how to choose floor and wall covering, lighting fixtures, and accessories; and how to arrange furniture.

### Insurance/Billing I (offered each semester)

Prerequisite: HSC 105, Medical Terminology and typing skills of 40 wpm. Medical insurance and billing concepts. Includes diagnostic and procedure coding; basic insurance concepts and terminology used by health insurance carriers; completion of claim forms for commercial insurance companies, Blue Cross/Blue Shield of Michigan, Medicare and Medicaid. Text available in Delta Bookstore.

### Personal Computer Business Applications - IBM and Compatible

Our training for business and industry includes Intro to Windows, Word for Windows, Excel for Windows, Lotus 1-2-3 (intro, intermediate, and macros for a variety of versions), WordPerfect (levels I and II), dBase IV, Paradox, Quattro Pro, Intro to the PC, Intro to DOS, as well as consulting in a variety of areas.

### Phlebotomy Program (offered fall and winter semesters)

The Phlebotomy course is designed to prepare individuals to work in a clinical setting as a phlebotomist in accordance with procedures established by the National Committee for Clinical Laboratory Standards. The student will, after successfully completing the program, be eligible to sit for the National Certification Agency exam to become a certified phlebotomist. The course runs for 10 weeks and includes lecture, simulated laboratory and clinical experience in area clinical agencies. Prerequisites: High school diploma or GED, COMPASS assessment scores of 38 in writing, 81 in reading, and 26 in math on pre-algebra. Please call 686-9415 if you have any questions, to receive an information packet and have your name placed on the interest list. Starting salary: \$8-10.30.

### Real Estate

Prepare for a career in real estate by beginning with Real Estate Fundamentals, a pre-sales license examination course required and approved by the State of Michigan.

### Nurse Refresher

A comprehensive review in preparation for returning to nursing employment. This 2-part course provides an opportunity to review and gain nursing knowledge and skill for direct patient care and leadership roles. A comprehensive pharmacology course is included. Call 686-9415 for more information.

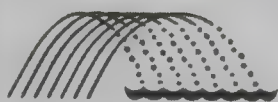
### Stationary Boiler Operator

Designed to train you to be employed as a stationary boiler fireman to look after boilers and mechanical equipment in public and private buildings and to assist you to obtain a boiler operator's license as well as stationary engineer's license.

### Travel Agent Training Program

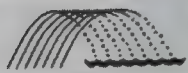
Includes all phases of the travel business: ticketing, cruises, air travel, tour, basic geography, selling techniques, and 56 hours of computer training.





# ACADEMIC POLICIES AND INFORMATION

- ◆ Acceptance of Credit
- ◆ Grading System
- ◆ Disputed Final Grade Policy
- ◆ Your Academic Status
- ◆ Academic Status for Financial Aid Recipients
- ◆ Graduation Requirements
- ◆ Commencement



## Acceptance of Credit

### Acceptance and Evaluation of Transfer Credits From Other Institutions, Training Programs or Examination Programs

1. Only **official transcripts** will be evaluated. Delta College will accept as official transcripts only incoming transcripts that have appropriate signatures and seals and have been mailed directly to the College from an issuing institution. Transcripts in the possession of the student or copies of transcripts or grade reports may be used for academic advising or counseling, but no transfer credits will be posted to the Delta College academic transcript from these documents. It is the responsibility of the Delta College Records and Registration Office to verify the official status of the transcript prior to evaluation.
2. Official transcripts should be mailed to the Delta College Admissions Office from the transfer institution. Admissions will then forward them to the Records and Registration Office. Transcripts received from a Michigan college or university at least one month prior to a registration period will generally be evaluated within one week of receipt in the Records and Registration Office. More time may be necessary to evaluate transcripts from out-of-state institutions.
3. Credits only, not grades, are accepted in transfer. Grades earned at another school in courses accepted by Delta College are not entered on the permanent Delta academic transcript or calculated in the Delta College cumulative grade point average.
4. A maximum of 38 credits acquired through transfer, training or examination programs are applicable to a Delta College Associate degree and the maximum that may be used toward registration priority.
5. The credit value of each course accepted in transfer will be determined by Delta College; the number of credits will never be greater than the Delta College equivalent course, but the number granted may be fewer than the number of credits received at the transfer institution.
6. Transfer credit granted will be shown on the student's permanent academic transcript.

#### A. Regionally Accredited Institutions

Course work completed at a college or university accredited by one of the six Regional Accrediting Associations of Colleges and Schools will be considered according to the following guidelines:

1. **Equivalent Course Work**  
Freshman and sophomore level courses are accepted in transfer. Higher level credits are accepted if they correspond to a specific course at Delta College. If Delta College does not have a department or area similar to the courses on the incoming transcripts, no credit will be awarded. Academic credit will not be granted for courses below the 100 level. A minimum of a "C" (2.0) grade on a 4.0 scale is required in each course for transfer.
2. **Non-Equivalent Course Work**  
"General Elective" credit will be granted for courses completed with a grade of "C" (2.0) or above on a 4.0 scale that are not equivalent to Delta College courses or disciplines. "General Elective" credit applicable to Humanities, Social Science, Science, or Lab Science will be so noted on the student's Delta transcript. (A student must request that a counselor submit the necessary form to the Records and Registration Office to receive this credit).

#### B. Non-Regionally Accredited Institutions

Courses that apply toward a Delta occupational Certificate/Associate degree program will be considered according to the following if they were completed with a grade of "C" (2.0) or above at institutions recognized and approved by the Council on Postsecondary Accreditation (COPA):

1. The Student and Educational Services Specialist will forward the transcript for evaluation of the occupational courses to the appropriate Division Chair or Discipline Coordinator. The following options are available to the Division Chairs or discipline Coordinators.
  - a. Equivalent Delta College credit may be granted upon review of course outlines, and/or course descriptions, and/or appropriate descriptive materials. It is the responsibility of the student to provide any requested materials to enable proper evaluation.
  - b. Equivalent Delta College credit may be granted after successful completion of Delta College courses at the subsequent level.
  - c. Equivalent Delta College credit may be granted upon demonstration of proficiency via examination, interview, or other appropriate evaluation means as determined by the appropriate Division Chair or Program Director.
  - d. Credit may not be granted.
2. No credit will be granted for General Education courses.

#### C. Non-Traditional Credit

##### 1. Military credit

- a. All veterans having a certified DD214 form on file in the Veterans Services Office will be granted credit for LW220, LW101 and two lifelong wellness theory (LWT) credits.
- b. Veterans who have taken educational programs during military service may, under certain conditions, receive elective credit for that work. The Guide to the Evaluation of Educational Experiences in the Armed Services by the American Council of Education is used to determine these elective credits.
- c. Courses completed at accredited military colleges, such as The Community College of the Air Force, may result in the awarding of transfer credit.

##### 2. Certified Training

Academic Credit can be earned for the following types of training programs and exams provided criteria for the award of credit is met.

- a. American Institute of Banking
- b. Certified Professional Secretary Exam
- c. Child Development Associate credential
- d. Current State of Michigan Cosmetology License
- e. Current State of Michigan EMT License
- f. Michigan Fire Fighters Training Council
- g. Current State of Michigan Paramedic License

##### 3. Correspondence Courses

Credit earned by correspondence from regionally accredited institutions will transfer to Delta College according to the guidelines for equivalent and non-equivalent credit as outlined.



#### D. Credit for Prior Learning

You may earn academic credit for prior learning in many areas of study at Delta College. The Credit For Prior Learning Program, administered through the Assessment/Testing Services Office, is designed for students who have gained, through related work experience and/or training, learning that may be equivalent to content taught in actual College courses. If you are interested in any of these programs, please be aware that the following restrictions may apply:

- These options are not available in all areas of study.
- Credits earned through this Program may not be transferrable to other institutions.
- Prior learning credits are not eligible for financial aid.
- You may only apply once for credit in the same course.

Four basic methods are used to assess prior learning. The first three methods are designed for new and currently enrolled students:

1. **Credit By Exam (CBE):** comprehensive challenge examinations are developed and evaluated by Delta College faculty in selected courses. If you earn a passing grade on a CBE examination, the credits will be recorded on your academic transcript for that course. A per-credit-hour-attempted fee is charged prior to taking a CBE examination. We recommend that you discuss the waiver option with your academic counselor.
2. **Credit By Portfolio:** an individualized process in which you submit a portfolio application, resume, personal manuscript, and supporting documentation of your prior learning. The faculty will then review and evaluate this material for possible credit. A per-credit-hour-attempted fee is charged prior to submitting portfolio materials to the appropriate academic Division. If you successfully complete a portfolio, the earned credits will be recorded on your academic transcript.
3. **Credit By Training:** an individualized process in which you earn academic credit for Delta College Training Programs. If you believe that you qualify for this option, contact Assessment/Testing.

The fourth method is designed primarily for transfer students:

4. **College Level Examination Program (CLEP) or Defense Activity for Non-Traditional Educational Support (DANTES):** national standardized tests in selected academic areas. The application forms, course equivalents, and minimum passing scores for the tests accepted at Delta College are available from Assessment/Testing. There is a test fee and a non-refundable administration fee charged per test. You must request that CLEP or DANTES send your examination scores to the Delta College Records and Registration Office. Upon receipt of successful exam scores, Records and Registration will record the appropriate credit on your academic transcript.

#### E. Articulation Agreements with High Schools and Career Centers

Articulation is a process which links two educational institutions together to help students make a smooth transition from one level of education to the next without experiencing delay, duplication of courses, and loss of semester credits. Delta College is part of a statewide effort to implement the Competency Based Education Articulation of career education programs.

The secondary articulation agreements allow students to receive college credit for instruction received at the secondary school/center for specific occupational courses. These agreements are signed contracts between the faculty and administrators of both institutions, and are re-evaluated bi-annually. The instructors at the secondary level initiate the process by completing a student request form and submitting it to the Articulation Office at Delta College. Once the student has completed six or more academic credits with a "C" (2.0) or better, the Articulation Office will request the Records Office to apply the articulated credit(s) to the student's transcript. No tuition or fees are charged for articulated credit.

##### The schools currently involved are:

Bay Arenac ISD Career Center  
Bay City Central High School  
Breckenridge High School  
Bridgeport High School  
Caro High School  
Carrollton High School  
Chesaning High School  
Genesee Area Technical Center  
Grand Blanc High School  
H. H. Dow High School  
Heritage High School  
Howell High School  
Huron Area Technical Center  
Iosco ISD  
John Glenn High School  
Marlette High School  
Mayville High School  
Merrill High School  
Midland High School  
Mt. Pleasant Area Technical Center  
Oakland Technical Center  
Pinconning High School  
Saginaw Career Complex  
Saginaw High School  
Standish Sterling High School  
Swan Valley High School  
Tuscola Technology Center  
Unionville-Sebewaing High School

**For Post-Secondary Articulation information please see page 22.**

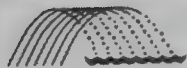
Further information may be obtained from the schools listed above, or from the Delta College Articulation Office, (989) 686-9070, from Midland (989) 495-4000, ext. 9070. More detailed information is published on the Articulation webpages found at: <http://www.delta.edu/artic>.

Students that  
Experience

the Delta  
Difference

"I choose Delta because the tuition is less than other local college's and the quality is next to none."

*Jason Eberhart, Saginaw*



# Grading System

## Grades

The grading system at Delta College is a letter system with associated quality points which are used to compute cumulative grade point averages. You will receive one final grade in each course taken.

Letter Grade	Meaning	Grade Points Per Credit
A	Excellent	4.0
A-	Excellent	3.7
B+	Good	3.3
B	Good	3.0
B-	Good	2.7
C+	Average	2.3
C	Average	2.0
C-	Average	1.7
D+	Poor	1.3
D	Poor	1.0
E	Fail	0.0
P	Pass (C/2.0 grade or above)	Not included in computing credits and grade points
NC	No Credit (C-/1.7 or below)	
I	Incomplete	
X	Audit	
W	Withdrawal No Evaluation	
WI	Withdrawal/Instructor Initiated	
WP/WE	Withdrawal Passing/Failing	
Z	In Progress	

**Note:** Non Credit Courses also use the above letter grades for their courses; however, no grade points are awarded and grade point averages are not maintained.

## Final Grades

Final grade reports are generally mailed to you within one week of the official ending date of each semester. They are also available via the Web through My Delta and the College's Touch-Tone System. See your most recent Schedule of Classes booklet for access information. Final grades are listed on your official academic transcript, which is maintained by the Records and Registration Office. Your final grade is the responsibility of individual faculty members. Instructors may exercise their own prerogatives with respect to your grades as long as these prerogatives do not conflict with other institutional policies.

## I - Incomplete

An instructor may assign an Incomplete grade if you have not fulfilled all course requirements when final grades are assigned. An Incomplete is a temporary grade given only when your work has been of **acceptable quality** near the end of the course, but the required amount has not been completed because of reasons satisfactory to the instructor.

**Requirements of a course are to be completed no later than December 1 for Incomplete grades issued in the Winter and Spring/Summer Semesters and April 1 for Incomplete grades issued in the Fall Semester.** In exceptional circumstances, additional time may be granted for completion of course work by notification from the instructor to the Director of Records and Admissions in writing.

## X - Audit

When you enroll in courses on an Audit basis, a grade of "X" will be recorded on your permanent record, if general requirements of auditing are fulfilled, and no credit will be earned. Some appropriate reasons for Auditing are professional enrichment or personal enjoyment. Tuition and fees are the same as for regular credit courses and a student number is required. Instructor Audit objectives must be fulfilled. Courses taken on an Audit basis are not applicable toward fulfillment of Associate degree or Certificate requirements. You must complete an Audit Request Form via "My Delta" or in the Records and Registration Office **no later than the end of the Delta College official refund period.** (See each semester's class schedule booklet). For the deadline to request an Audit for courses that meet one week or less, you should contact the Records and Registration Office. Any questions regarding the course Audit option should be directed to the Records and Registration Office.

Audited courses **do not count** in determining student eligibility for financial aid. If you are receiving financial aid, you should contact the Office of Financial Aid before changing a course from academic credit status to Audit status. Audit grades will **not** be used in determining academic load for veterans' certification or athletic eligibility.

## W - Withdrawal

This grade is used when you officially withdraw from a course from the 12th calendar day through mid-point of a course. Additionally, your instructor has the **option** of withdrawing you from a course up to mid-point if:

1. You have been absent from an excessive number of classes or
2. You lack the course prerequisites.

## WI - Instructor Initiated Withdrawal

This grade is instructor initiated for lack of course prerequisites or attendance through four-fifths (4/5) of the course (the 12th week of a 15-week course).

## WP/WE - Withdrawal Passing/Failing

If you officially withdraw from a course after mid-point through the end of the 12th week (4/5's of course length), a grade of "WP" (passing course work with a grade of "D" or better at the date of withdrawal) or "WE" (failing course work at the date of withdrawal) will be assigned to you by the instructor.

For information on the drop and withdrawal policies and procedures, see Section II, The Enrollment Process, Registration.

## Z - In Progress

This grade is used for those classes which begin in one semester and continue into another. A final grade with associated quality points will be awarded at the official completion of the class.

## Grade Change Procedure

Once recorded by the Records and Registration Office, grades will be changed only if an official Grade Change Form is completed and signed by the instructor and the appropriate academic Dean. The Grade Change Form must be received **no later than the end of the next semester following grade issuance.** This policy does not apply to grade changes under consideration via the Disputed Grade Policy.

## Plagiarism and Academic Honesty

See "Student Rights, Responsibilities and Conduct", page 175.



## P/NC - Pass/No Credit Option

The Pass/No Credit grade option is available for several courses at Delta College. If you are interested in this grading option in place of the usual "A" through "E" grading system, you should declare this choice at registration or **no later than** the end of the 12th week of the semester (6th week of a session) by completing a form at the Records and Registration Office. Courses approved for the P/NC grade option are listed in each semester's Academic Class Schedule booklet.

### Guidelines and Procedures for P/NC Grade Option:

1. Grades on the P/NC system are not included in computing the semester or cumulative point average.
2. Grade of "P" (Pass): Credit is granted and represents performance at or above the "C"/2.0 level.  
Grade of "NC" (No Credit): No credit is granted and represents performance at or below the "C-"/1.7 level.
3. You may not apply more than a total of 12 credits of P/NC course work toward Delta graduation requirements.
4. Enrollment on a P/NC basis is recorded with the Records and Registration Office.  
No indication of your P/NC status will be communicated to a faculty member by any office of the College.
5. A letter grade will be on file in the Records and Registration Office, but only "P" or "NC" will appear on your transcript.
6. If you desire to have any grades converted from P/NC to letter grades, you may do so by applying to the Records and Registration Office **no later than the end of the following semester after the P/NC grade was issued.**
7. Course prerequisites and other criteria for enrolling in any course shall be determined by the Department or Division offering the course and apply equally to both the traditional and the P/NC grading systems.
8. If you are planning to transfer, you should first check with a Delta counselor regarding the acceptance of the P/NC grade option for specific courses by the transfer institution.
9. Courses may not be taken on the P/NC system if they are listed by name and number in a student's curriculum.

### Grade Point Average (G.P.A.)

A student's Grade Point Average is determined by dividing the number of credits attempted into the quality points.

For example:

	Attempted	Grade	Quality Points
ENG 111	3	B	3x3=9
MTH 121	3	B	3x3=9
BIO 111	4	C	4x2=8
SOC 211	3	A	3x4=12
	<u>13</u>		<u>38</u>

$$\text{G.P.A.} = 38 \text{ divided by } 13 = 2.92$$

**Credits Attempted** - Credits for which the student enrolled and for which grades of A through E were given. Credits for courses in which grades of P, W, WI, WP, WE, I, X, and Z are given are not included here.

**Credits Earned** - Includes all academic credits taken at Delta for which final grades of A through D were recorded. Courses below 100 are not included in credit hours earned.

**Credits transferred** from other institutions or earned by examination are not included in cumulative averages.

**Non-Credit Courses** - Non-credit courses are not included in cumulative averages.

### Quality Points

The number of grade points earned in a course is the number of credits multiplied by the number of grade points corresponding to the letter grade received. For example, a grade of B+ in a four-credit course equals 13.2 grade points ( $3.3 \times 4 = 13.2$ ).

### Repeated Courses

You may not enroll in a course for credit or audit, whether completed or not, more than three times. Exceptions to this policy requires authorization by the appropriate Division Chair or Academic Dean.

The highest grade received by you for any given course shall be the grade used in computing the cumulative grade point average and the number of credits shall only be counted once in the total number of credits attempted. All grades received by you in a given course shall, however, **remain on your academic transcript** but will be designated by the Records and Registration Office as having been repeated, so it is clear that only the highest grades earned are being counted in cumulative totals.

## Academic Transcripts

Your transcript is the College's official academic record of your work. Your record is updated at the close of each semester. Your academic record includes all academic courses attempted and completed (course titles, credit hours, final grades and honor points), semesters enrolled, transfer credit accepted, courses waived, courses substituted, credit awarded by examination or advanced placement, certificates/degrees awarded, honors, and academic probation/dismissal status. Grades of most Non Credit course work are also maintained by the Records and Registration Office. There is no charge for transcripts up to a maximum of 10 per day, however, there is a \$10 charge for same-day service. Copies will be sent upon your written request to anyone designated by you. Ordinarily transcripts are mailed within one week. Transcript copies will not be furnished if you have delinquent accounts at the College.

## Attendance Policy

It will be necessary for certain groups of students (e.g., veterans, financial aid recipients) to adhere to attendance requirements imposed by the policies of external regulatory agencies beyond the following stipulated by Delta College:

1. Attendance is **expected** at all courses for your maximum achievement.
2. It is your responsibility to make arrangements for missed course work.
3. The College recognizes that on occasion special College-connected events will conflict with scheduled course/laboratory times. Before those special occasions, you will need to work with the instructor to make alternate arrangements.
4. Individual instructors determine attendance rules and will explain those rules at the initial course meeting and/or in the course syllabus.

## Change of Student Information

A change in your name, home address, e-mail address, or program needs to be reported immediately to the Records and Registration Office or the Admissions Office. Communications, Schedules, and Grade Reports will be sent to the latest address on file. Legal name changes, other than marriage, or a Social Security number change require proper documentation.

## Classification of Students

The classifications below apply only to academic students pursuing Certificate or Associate degree programs. Non Credit course hours are not included.

<b>Freshman</b>	29 or less credits earned
<b>Sophomore</b>	30 or more credits earned
<b>Full-Time</b>	Enrolled in 12 or more credits during a semester
<b>Part-Time</b>	Enrolled in 11 or less credits during a semester

## Financial Aid Attendance Information

By federal regulations, attendance follow-up must be done for financial aid recipients who drop to 0 credits, who end the semester with all "E" grades or a combination of "E" and "W" grades, and for whom instructors process instructor-initiated drops. In all cases, if it is found that students never attended, aid will be adjusted, funds will be returned to appropriate aid programs, and the students will be billed.

## Semester Honors

Each semester a President's List is issued of all students who receive a grade point average of 4.0 for that semester; a Vice President's List for all students who receive 3.7 through 3.99 grade point averages; and a Dean's List of students who receive 3.5 through 3.69 grade point averages. To be eligible, you must complete at least 6 credit hours in a Fall, Winter or Spring/Summer Semester. Courses taken on the Pass/No Credit option do not apply.







# Disputed Final Grade Policy

If you do not agree with the final grade you receive in a course, we have a process available to you called Grade Appeal. Since a final grade assignment is made on an individual basis, this procedure can be invoked only by individuals questioning the appraisal of their own academic progress and cannot be invoked by one individual on behalf of a group of individuals.

Every effort will be made to resolve conflicts through informal discussion with the involved parties. **You are encouraged to contact the Grade Ombudsman for a clear understanding of the process.** All parties involved are encouraged to keep the time intervals between steps as short as possible. The time limits identified are considered maximum unless altered by the Grade Ombudsman, who has the responsibility to see that deadlines are met and the right to extend them under extraordinary circumstances. The Grade Ombudsman is a non-faculty member of the Senate Assembly who is appointed by the President of the College in consultation with the Faculty Executive Committee. For the current Grade Ombudsman, contact the Senate office at 686-9297. **The following outlines the basics of the policy. A complete copy is available from the Grade Ombudsman or on-line at [www.delta.edu/senate/section4.html#4025](http://www.delta.edu/senate/section4.html#4025).**

## Informal Process

A student who wishes to discuss concerns regarding a grade will contact the faculty member and/or the Division Chair within 25 calendar days following the date the grades are mailed from the Records Office, as recorded by the postmark. The faculty member and the student will attempt to resolve the differences. The Division Chair may be asked to assist with the conflict resolution.

## Formal Process

1. To formally appeal a final grade for a course, the student **must** contact the Grade Ombudsman within five calendar days after the conference with the faculty member and/or Division Chair.

2. The student will write, within five calendar days of meeting with the Grade Ombudsman, a formal statement that explains the circumstances of the disputed grade. The statement will be given to the faculty member.

3. The faculty member will write a statement of response and submit it to the Division Chair within five calendar days of receiving the student's statement.

4. The grade Ombudsman will supply the student with a copy of the faculty member's statement and supply the Division Chair with a copy of the student's statement.

5. The Chair will meet with the student and the faculty member within five calendar days of receiving the student's and faculty member's statements to discuss the grade appeal.

6. The Chair will take one of the following actions within two calendar days of the meeting with the student and the faculty member:

1. Dismiss the appeal and the grade remains.
2. Recommend a change of grade, or a change in the grade under specific conditions which are defined by the Chair.

7. The recommendation of the Chair may be appealed to the Grade Appeal Board by either the faculty member or the student within three calendar days of receiving the Chair's recommendation.

8. The Grade Appeal Board is composed of seven members: four faculty members, (three appointed by the Faculty Executive Committee and one appointed by the Chair from the Division which offers the course in which the grade is being appealed); the appropriate academic Dean; one Student & Educational Services representative appointed by the Vice President of Student & Educational Services; and one student from the Student Senate Committee.

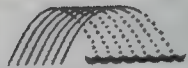
9. The Grade Appeal Board will meet within 10 calendar days of receiving the appeal at a time when both parties are available to respond to the Board's questions. Under special circumstances, alternates may be appointed to the Grade Appeal Board by the person originally responsible for the appointment of that position.

10. By majority vote, the Grade Appeal Board will make one of the following decisions within two calendar days of the meeting:

1. The appeal is dismissed and the grade remains.
2. The grade dispute is resolved by changing the grade, or changing the grade under specific conditions. All members of the Board will determine if the grade should be changed and the faculty members on the Board will decide the specific grade to be awarded.

11. Decisions reached by the Grade Appeal Board may be appealed to the President of the College. The President will only hear appeals that involve claims of procedural mistakes made in the process defined above.

The President may: • Dismiss the appeal. • Return the case to the Grade Appeal Board for rehearing.



# Your Academic Status

## Standards of Academic Achievement

1. A minimum cumulative grade point average of "C" (2.0) must be achieved to graduate with an Associate degree or Certificate.
2. A student making **Satisfactory Progress** is defined as:
  - a. Satisfactory/No Conditions - A student whose cumulative Grade Point Average satisfies the **Academic Status Scale**.
  - b. Academic Caution - A student whose cumulative Grade Point Average (GPA) satisfies the **Academic Status Scale** but is below 2.0 and the credit hours attempted are less 45.
3. A student making **Unsatisfactory Progress** is defined as:
  - a. Academic Probation - A student who has attempted 13 or more credit hours and whose cumulative GPA is below the required grade point average as indicated on the **Academic Status Scale**.
  - b. Academic Suspension - A student who has been on Probation for at least two Academic Semesters or who has not met the conditions of their **Educational Development Plan**.

B. Students placed on probation will be notified of their status and be required to develop an **ACADEMIC SUPPORT PLAN** with an assigned member of Student Services. An approved Academic Support Plan must be on file in the Records & Registration Office prior to the student being allowed to enroll.

### II. Students placed on ACADEMIC SUSPENSION:

After being on Academic Probation for at least two semesters or not meeting the conditions of their Academic Support Plan students will be notified of their status by the Director of Records and Registration. They will be denied enrollment for two consecutive semesters and de-enrolled from classes they have pre-registered in.

1. Students placed on suspension that may have mitigating circumstances<sup>2</sup> may appeal their suspension to a Dean or his/her advisor. If the appeal is successful an Academic Support Plan will be required prior to registration.
2. Students enrolling after being suspended for two semesters will be required to meet with an assigned member of Student Services and have a new Educational Development Plan on file in the Records & Registration Office prior to registration.

## Table for Determining Academic Status

Following is the table for determining your academic status at Delta College. To use the table: 1) locate on your grade report or academic transcript your cumulative grade point average and the total number of credits attempted; 2) find the corresponding credits attempted in the left-hand column of the table; and 3) read across the page to your right until you locate the column which includes your current cumulative grade point average. This column heading indicates whether you are in the Satisfactory Progress or Academic Probation.

Academic Status Scale			
Credit Hours Attempted	Satisfactory Progress		Unsatisfactory Progress
	No conditions	Caution	Probation
	GPA	GPA	GPA
0 - 12.9	1.50 - 4.0	0.00 - 1.49	
13.0 - 23.9	1.75 - 4.0	1.50 - 1.74	0.00 - 1.49
24.0 - 44.9	2.00 - 4.0	1.75 - 1.99	0.00 - 1.74
45.0 or more	2.00 - 4.0		0.00 - 1.99

## Procedures for Academic Caution, Probation, and Suspension

- I. Students placed on ACADEMIC CAUTION or ACADEMIC PROBATION:
  - A. Following each semester, students will be notified of their status and assigned to a member of Student Services.
    1. Caution: strongly urged to seek the **assistance** of an assigned member of Student Services.
    2. Probation: **required** to meet and determine **assistance** with an advisor.

### <sup>1</sup>ACADEMIC SUPPORT PLAN (ASP)

An Academic Support Plan is a blueprint that outlines actions to be taken by the student that will assist a student to improve their academic performance. It could/should include such things as:

- a. Future course selection that will provide for maximum success.
- b. Number of credits to attempt per semester (based on data presented by student).
- c. Assistance e.g. tutoring, selecting peer mentored classes, P.A.L. program, meeting with instructor.
- d. Time management strategies.
- e. Other services as appropriate e.g. handicapped services, counselors, career center, etc.

### <sup>2</sup>MITIGATING CIRCUMSTANCES

Mitigating circumstances are circumstances beyond the **reasonable control** of the student, such as injury or illness, death of a relative, or other special circumstances.

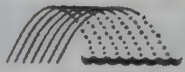
Special circumstances are defined to include the above with documentation, or such things as documented abuse, divorce, illness/surgery of spouse or child, or documentation that the student was required to drop out to care for a parent or was involved in a serious automobile accident, or was incarcerated. "Documented" is the operative word here.

Items not considered are lack of transportation, "I was just young and stupid," "I wasn't serious, but I am now," etc.

## Fresh Start Policy

If you wish to re-enroll after an absence from Delta College of three or more years you may submit a request to the Director of Records and Admissions to have your GPA recomputed using only grades earned after enrollment. If the request is approved, all courses previously taken at Delta College will remain on your permanent record/transcript. All course grades prior to re-enrollment will be converted to P/NC grades. Courses with grades of A, A-, B+, B, B-, C+, C will become P grades with credit; all other course grades will become NC grades without credit. **You may only use the Fresh Start Policy once.** The cumulative GPA and Academic Achievement policy conditions will be computed using all grades earned from the point of re-enrollment. **Note:** Regardless of the number of P grades resulting from this policy, a maximum of twelve (12) credit of P grades may only be applied toward Delta College graduation requirements. You are advised to discuss this option with your Counselor prior to the request.





# Academic Status for Financial Aid Recipients

## Standards of Academic Progress for Financial Aid Recipients

Students must be making satisfactory academic progress toward the completion of a Certificate or Associate degree to be eligible for financial aid.

Standards of Academic Progress for Financial Aid Recipients are applied to all students receiving financial assistance after they have attempted 12.9 credits at Delta College. All semesters and courses in which students registered at Delta College are included in determining Satisfactory Academic Progress, regardless of whether or not the students received financial aid for those semesters and courses.

### I. Standards of Academic Progress for Financial Aid Recipients

A. Making Satisfactory Academic Progress is defined as earning a cumulative grade point average (GPA) consistent with the Academic Status Scale below. In calculating the GPA on this Scale, all credits for which students ever enrolled at Delta College are included (grades A through E, P, NC, I, W, WN, WP, and WE plus all repeated courses).

#### ACADEMIC STATUS SCALE

Enrolled Delta Credits	Minimum GPA Required
0-12.9	0.00
13-23.9	1.50
24-44.9	1.75
45 or more	2.00

B. Making Satisfactory Academic Progress is also defined as having satisfactorily completed 67% or more of all credits in which students have ever enrolled at Delta College.

1. Grades of A, A-, B+, B, B-, C+, C, C-, D+, D, or P are considered to be satisfactory completions.
2. Grades of W, WN, WP, WE, NC-No Credit, I-Incomplete, and E-Failure are **not** considered to be satisfactory completions.
3. For students with repeat grades, the lower grade is considered to be an unsatisfactory completion and the higher grade is considered to be a satisfactory completion.
4. For students choosing the Fresh Start option, grades changed to P are considered to be satisfactory completions. Grades changed to NC are **not** considered to be satisfactory completions. (Students choosing this option should be aware that grades of C-, D+, and D, which are considered as satisfactory completions, will be converted to NC grades, which are not considered to be satisfactory completions.)

C. Satisfactory Academic Progress also requires that financial aid recipients complete the Certificate or Associate degree within a time frame which, by federal regulation, is 150% of the published length of the program. For example, if a student is in an Associate degree program that requires 62 credits, the degree must be completed in a maximum of 150% of 62 credits, or 93 credits including both attempted and completed credits. (Students should consult the Delta College Catalog, Section III, Programs of Study, to find the number of credits required in their Certificate or Associate degree program, then multiply that number by 1.5 to determine the maximum number of credits.)

1. When students reach the maximum number of credits, financial aid will be terminated.
2. All semesters are taken into consideration when determining the maximum number of credits, whether or not students received aid during those semesters.
3. All grades (A through E, P, I, NC, W, WN, WP, and WE) and repeated courses are counted in determining the maximum number of credits.

4. Transfer credit must be taken into consideration when calculating the maximum number of credits; therefore, all credits up to a total of 38 that are transferred into Delta College will be calculated into the maximum number of credits for an Associate degree and all transfer credits up to a total of 15 will be calculated into the maximum for a Certificate.

Academic records of aid recipients are reviewed by the Office of Financial Aid prior to awarding for the standard academic year (Fall and Winter Semesters) to ensure that Standards of Academic Progress for Financial Aid Recipients continue to be met. Records are reviewed again prior to awarding for the Summer Semester. Additionally, academic records for loan recipients are checked prior to each disbursement. Students receiving aid whom the College places on Academic Probation between reviews will maintain their aid eligibility (but not their loan eligibility) for the probational semester(s) until the next review, providing them with the opportunity to improve their academic records and once again meet Standards. If Standards of Academic Progress for Financial Aid Recipients are not met at the time of the next review, financial aid will be terminated.

### II. APPEALS

A. Students who have been terminated from further financial aid for failure to meet Standards of Academic Progress have the right to appeal. All appeals must be submitted in writing on the Satisfactory Academic Progress Appeal Form to the Office of Financial Aid. Appeals must be received no later than one week before the semester begins. Appeals received after that time will be considered to be appeals for the following semester, unless the students are officially registered in classes (tuition and fees are paid and students are in attendance). Students submitting appeals should state the reasons why satisfactory progress was not made and discuss actions that have been or will be taken to make satisfactory progress in the future. **Documentation supporting the reasons for the appeal must be attached. Appeals submitted without documentation will not be considered.** Mitigating circumstances beyond the reasonable control of students, such as injury or illness, death of a relative, or other special circumstances may be grounds for successful appeals.

1. If appeals are approved, students will receive an additional probational semester of aid during which they must **EITHER** complete all courses in which they register with grades of C (2.0) or better (no C-, D+, D, E, or NC grades), and with no Withdrawals (W, WP, WE) and no Incompletes (I), **OR** once again meet the Delta College Standards of Academic Progress for Financial Aid Recipients. At the end of the semester, grades will be checked.
  2. If students have the met Standards of Academic Progress for Financial Aid Recipients, aid will once again be awarded. If students have not met these Standards, but have met the conditions stated in No. 1 above, further aid will be granted on a probational semester-by-semester basis. Grades will be checked at the end of each semester before aid is awarded for the next semester to ensure that the student is continuing to make academic progress. This process will continue until such time as the student once again meets the Standards of Academic Progress for Financial Aid Recipients. If it should be found that students have not made academic progress during one of these probational semesters, aid will be denied and the students will have to attend at their own expense until such time as the Standards of Academic Progress for Financial Aid Recipients are once again met.
- B. The decisions reached on all appeals by the Financial Aid Advisory Committee will be final. However, if a student believes due process was not followed, the student may ask the Director of Financial Aid to review the decision made by the Advisory Committee.



# Graduation Requirements

## Degrees and Certificates Granted by Delta College

- Associate in Arts
- Associate in Science
- Dual Degree

- Associate in Applied Arts
- Associate in Applied Science
- Associate in General Studies
- Associate in Business Studies

- Certificate of Completion
- Certificate of Achievement
- Advanced Certificate
- Post Associate Certificate

### Associate Degree Requirements:

Students must complete all basic degree requirements, plus specific requirements in one of the Associate degrees listed. Courses numbered below 100 do not count towards graduation. A maximum of 38 semester hours of transfer/other credit may be applied toward a Delta College Associate degree. All financial obligations to Delta College must be fulfilled before a student is issued a diploma and/or certificate.

If your attendance has been **continuous** in the same program you may, for the purpose of graduation, elect either the program in effect at the time of your first registration at Delta or the program in effect at the time of your application for graduation. **Continuous attendance is defined as attending a minimum of one semester during each academic year since your first registration or when you officially declared your program of study.** If your attendance has not been continuous, you must follow the program in effect at the time of your readmission.

## Basic Requirements

1. Earn a minimum cumulative grade point average of "C" (2.0) in the programs required to complete a specific Associate Degree, Certificate or Certification Program. Students in the occupational curricula must earn a minimum of "C" (2.0) or higher in specified courses. These courses are identified in Section III, Programs of Study.
2. Fulfill all of the prescribed requirements of the specific program including courses, credit hours, grades, and/or hours of attendance. See Section III, Program of Study. (Courses numbered below 100 do not count towards graduation.)
3. Earn a minimum of 62 credits.
4. Successfully complete six credits in content-area writing courses.\* Students with previously-earned degrees from accredited colleges and universities are exempt from this policy. Students enrolled prior to Fall 1988, even if they have not maintained continuous attendance, are also exempt from this policy.
5. Two credits of Lifelong Wellness are required for graduation. One credit **MUST** be LW220. The second credit must come from the following: LW 101, 106, 108, 110, 111, 113, 114, 115, 118, 124, 127, 131, 137, 151, 152, 153, 154, 155, 157, 158, 159, 174, 183, 193, 204, 217, 280, or the series of LW 206A, 206B and 206C.
6. Successfully complete an approved course in government: POL 103, 111, 212, or 221.
7. Earn a minimum of 24 credits by instruction while in attendance at Delta College.
8. File an application for an Associate or Dual degree and/or Certificate with the Records and Registration Office by mid-semester of the final semester of your course work.
9. You cannot apply more than a total of 12 credits of P/NC course work toward graduation requirements.
10. Delta College reserves the right to require students to successfully complete "key courses"\* in a program within a stated time frame. This may require you to repeat certain courses, even though a passing grade was previously earned. A "key course" is one whose content is essential to skills development and successful performance and where course content is likely to significantly change over time, as determined by divisions.

\*Effective with the Fall Semester 1988, all entering students (those with no prior Delta credits) must complete six credits of writing across the curriculum courses to fulfill graduation requirements. Courses are designated by a "W" next to the course code, such as POL 103-02W, in the Schedule of Academic Classes booklet. College composition courses may not be used to fulfill the College writing requirement.

## Statement of General Education

General Education is the process by which a student acquires the core knowledge and fundamental skills to become an educated person and life-long learner. CORE KNOWLEDGE is the understanding and appreciation of the social, cultural, technological and scientific developments of society. The EDUCATED PERSON has the ability to apply this core knowledge to function effectively and creatively in every aspect of life. The LIFE-LONG learner is able to both update this core knowledge and develop individual potential in a dynamic environment. General Education, therefore, provides the framework essential to the survival and success of our society.



## Certificate Requirements

1. Earn a minimum of two thirds (2/3) of all credits at Delta College. Exception: Accreditation requirements in particular occupational curricula may require a minimum number of credits at Delta. Any exceptions to the two-thirds (2/3) requirement will be approved by Academic Council and identified in the Programs of Study section of the Delta College catalog.
2. Complete at least one class in the program with a letter grade of "C" (2.0) or higher.
3. Apply no more than twelve (12) credits of "P" grades.
4. Fulfill Basic Requirements Nos. 1, 2, 8, 9, and 10 listed on the previous page.

## Associate in Arts Degree (A.A.) Requirements

1. Fulfill all Basic Requirements.
2. Satisfactorily complete six credits in English composition or an approved equivalent from the following: ENG 111, 111H, or 111A; and ENG 112, 112H, 112A, ENG 113 or ENG 211.
3. Satisfactorily complete 8 credits minimum in each of Groups I, II and III listed below.

## Associate in Science Degree (A.S.) Requirements

1. Fulfill all Basic Requirements.
2. Satisfactorily complete six credits in English composition or an approved equivalent from the following: ENG 111, 111H, or 111A; and ENG 112, 112H, or 112A, ENG 113 or ENG 211.
3. Satisfactorily complete 8 credits minimum in each of Groups I and II plus 20 credits minimum in Group III listed below.

## Group Requirements for Associate in Arts and Science Degrees<sup>5</sup>

**You must complete courses from at least two subject areas listed in each of Groups I, II, and III**

Specific major program requirements and acceptable courses within the group requirement areas differ among transfer colleges and universities. It is recommended that if you are planning to transfer, you should consult with a counselor to ensure that your planned course work meets the requirements for graduation from Delta College as well as specific requirements at other institutions into which you may wish to transfer.

### Group I: Humanities

(in at least two subject areas)

American Sign Language (ASL): All<sup>4</sup>  
Architectural Technology: ARC 251 only  
Art: All<sup>4</sup> except ART 113, 114, 219, 283, 289  
English: ENG 253, 254, 256 only  
French (FR): All<sup>4</sup>  
German (GE): All<sup>4</sup>  
History: HIS 111 and 112 only<sup>1</sup>  
Interdisciplinary Humanities (IHU): All<sup>4</sup>  
Literature (LIT): All<sup>4</sup>  
Management: MGT 203 only  
Music: All<sup>4</sup> except MUS 138  
Philosophy (PHL): All<sup>4</sup>  
Photography (PHO): All<sup>4</sup>  
Russian (RUS): All<sup>4</sup>  
Spanish (SPA): All<sup>4</sup> except SPA 107  
Speech: SPH 112, 114, 202, 215, 216, 244 only

### Group III: Natural Science

(in at least two subject areas; must include at least one lab science of 15 contact hours.)

Astronomy (AST): All<sup>4</sup>  
Biology (BIO): All<sup>3, 4</sup> except BIO 251  
Chemistry (CHM): All<sup>4</sup>  
Geography: GEO 103, 111<sup>2</sup>, 261, and 267 only  
Geology (GLG): All<sup>4</sup>  
Interdisciplinary Science: SCI 250, 290-299 only  
Mathematics: MTH 110 and above<sup>4</sup> except MTH 117  
Physical Science (PSC): All<sup>4</sup>  
Physics (PHY): All<sup>4</sup>  
Sociology: SOC 230 only<sup>3</sup>

### Group II: Social Science

(in at least two subject areas)

Biology: BIO 230 only<sup>3</sup>  
Child Development: CD 116 only  
Economics (ECN): All<sup>4</sup>  
History (HIS): All<sup>1, 4</sup>  
Geography (GEO): All<sup>2, 4</sup> except GEO 103, 261, or 267  
Management: MGT 204, MGT 205 only  
Political Science (POL): All<sup>4</sup>  
Psychology (PSY): All<sup>4</sup> except PSY 235  
Sociology (SOC): All<sup>3, 4</sup> except SOC 157, 158, 159, 161, and 162

#### Notes:

<sup>1</sup> HIS 111 and 112 may be included in either Group I or Group II, but may not be counted in both groups.

<sup>2</sup> GEO 111 may be included in either Group II or III, but may not be counted in both groups.

<sup>3</sup> BIO 230 and SOC 230 may be included in either Group II or III, but may not be counted in both groups.

<sup>4</sup> "All" includes courses numbered 100-289; courses below 100 are excluded. Individualized instruction, special projects and other courses numbered 290 through 299 are excluded.

<sup>5</sup> Completion of requirements for either the Associate in Arts Degree or the Associate in Science Degree automatically fulfills the requirements of the MACRAO Articulation Agreement. Information on the MACRAO Articulation Agreement is specified on page 19.

## Associate in Applied Arts Degree (A.A.A.) Requirements

1. Fulfill all Basic Requirements.
2. Satisfactorily complete six credits in English composition or an approved equivalent from the following:  
ENG 111, 111H, or 111A; and ENG 112, 112H, 112A, or 113.

## Associate in Applied Science Degree (A.A.S.) Requirements

1. Fulfill all Basic Requirements.
2. Satisfactorily complete six credits in English composition or an approved equivalent from the following:  
ENG 111, 111H, or 111A; and ENG 112, 112H, 112A, or 113.

## Associate in Business Studies (A.B.S.) Degree Requirements

1. Fulfill all Basic Requirements.
2. Satisfactorily complete six credits in English composition or an approved equivalent from the following:  
ENG 111, 111H, or 111A; and ENG 112, 112H, 112A, or 113, or business communications as required by specific curricula.

## Associate in General Studies (A.G.S.) Degree Requirements

This degree will meet your needs if your goal is self-enrichment and you are not following a specific occupational or transfer program. All courses offered for academic credit at Delta College are applicable to this degree as per course descriptions. Because of the limited transferability, or in some cases non-transferability, of this degree, it is strongly suggested that you discuss this option with a counselor and consider fulfilling the Group Requirements.

1. Fulfill Basic Requirements Nos. 1, 3, 4, 6, 7, 8, 9, and 10.

## Dual Associate Degree (A.A.S. & A.B.S.) Requirements

Dual Associate degrees are available in several occupational fields. The requirements are generally completed simultaneously. Your diploma will list both degrees: Associate in Applied Science (health care curricula) and Associate in Business Studies: Business Management

1. Fulfill Basic Requirement.
2. Satisfactorily complete an additional 24 credits minimum, as prescribed for the approved dual degree. See page 46.
3. A student with no prior college degree would have to earn a **minimum** of 86 credits to earn a Dual Degree (62 for the Health Degree and 24 for the Business degree).

Students who have earned a degree previously may not use courses from that degree to satisfy the requirements of a "Dual Degree". It is possible that a student's previous degree may have included one or more of the required business courses (MGT 153, 245). They do not have to retake such classes, but must replace them from the list of approved business courses under the dual degree to complete an additional 24 credits for the Dual degree.

## Subsequent and Simultaneous Associate Degrees

Associate degrees can be earned from Delta College simultaneous or following the first earned degree; however, when you complete two or more curricula in the same Degree with a difference of less than 24 credits, you will receive only one Associate degree and the transcript shall indicate that you have completed requirements in two or more curricula. Candidates for subsequent degree(s) or simultaneous must meet the following requirements:

### A. General Requirements

1. Satisfactorily complete a planned curriculum in one of the following degrees: Associate in Arts, Science, Business Studies, Applied Science, or Applied Arts.
2. Earn a minimum of twenty-four (24) additional semester hours of credit by instruction at Delta College. Accordingly, the minimum number of credits earned must equal the credits required for the first degree plus 24.
3. Fulfill Nos. 1, 2, 3, 7, 8, 9, and 10 of the Basic Requirements.

### B. Subsequent Associate Degree Requirements

1. Already have earned a Baccalaureate, or higher degree from a "regionally accredited institution". Previously earned credits will be evaluated for transfer to this degree.
2. Basic Requirements 4, 5, and 6 will be waived for candidates with a Baccalaureate or higher degree from a regionally accredited institution, unless occupational curricula competencies specify otherwise.

### C. Simultaneous Associate Degree Requirements

1. While working on one degree at Delta College, students may complete courses applied to a second Associate Degree. Therefore, credits earned beyond those needed for the first degree may be applied toward the second degree.
2. When the student completes two or more curricula in the same Degree (Associate in Arts, Science, Business Studies, Applied Science, or Applied Arts) with a difference of less than twenty-four (24) semester hours of credit, the student will receive only one (1) Associate Degree and the transcript will indicate that the student has completed requirements in two or more curricula.





## Commencement

One of the most memorable moments in your life will be receiving your Certificate or Associate degree from Delta College. You will want to attend Commencement, which will highlight this special moment for you and your family. Sometimes students are unaware of the special importance of attending Commencement. Relatives and friends take particular pride in seeing you achieve this goal. Give your family and friends the special pleasure of seeing you graduate from Delta College.

Although you may complete graduation requirements at the end of the Fall or Spring Semester, Commencement ceremonies are only held once a year at the end of the Winter Semester. Diplomas are mailed to you by the Records and Registration Office approximately four weeks after the end of the month in which you complete your requirements.

The Commencement Program and your academic transcript will carry special designations if you complete your Associate degree with an outstanding academic record according to the following cumulative grade point averages:

- 3.50 - 3.69 Honors
- 3.70 - 3.89 High Honors
- 3.90 - 4.00 Highest Honors

Transfer students are eligible for graduation honors if they have completed the last twenty-four (24) credit hours of a curriculum at Delta College.



## Awards

Outstanding students are recognized each year for their academic achievement and leadership while in attendance at Delta College. Criteria, information and nomination forms are available from the Student Activities office for the following awards:

### **Art Sample Furniture & Design Center**

Recognizes the outstanding graduate in Interior Design.

### **Board of Trustees Award**

Presented to the graduate/graduates who has earned the highest academic average.

### **Design Craftsmen Award**

Recognizes the outstanding graduate in art who has demonstrated excellence of artistic expression in any field of visual arts.

### **Dr. and Mrs. Donald C. Durman Award**

Recognizes a graduate who has demonstrated service and leadership to Delta College and the community.

### **Dr. Daniel Kinsey Award**

Characterizes athletic achievement, superior scholarship, and consideration for others.

### **Eaton Corporation Award**

Recognizes the graduate who has achieved a superior scholastic record in mathematics.

### **English Division Award**

Recognizes a graduate with outstanding scholarship in English studies.

### **Chemical Bank & Trust Company Award**

Recognizes the outstanding graduate in finance and banking.

### **Frances Goll Mills Award**

Recognizes the outstanding graduate in nursing.

### **Fred E. Dulmage Memorial Award**

Recognizes the top ranking graduate in the area of Engineering & Mechanical Technology.

### **Lola Bishop Whitney Award**

Recognizes superior academic achievement and promise in the study of Foreign Language.

### **Midland County Bar Association Award**

Recognizes the outstanding graduate in criminal justice who plans to enter this field directly or who will continue studies at a transfer institution.

### **Morley Foundation Award**

Recognizes the outstanding graduate in business and management.

### **Paul Sowatsky Memorial Award**

Recognizes the outstanding graduate in the General Motors Automotive Service Education Program.

### **Rowleys, Inc. Automotive Technology Award**

Recognizes the Automotive Service Technology graduate with an outstanding academic record.

### **Seward, Tally & Piggott, P.C. Pre-Law Award**

Recognizes academic achievement and superior citizenship of a graduate planning to pursue further study in the legal profession.

### **The Dow Chemical Company Michigan Division Award**

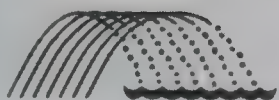
Recognizes the graduate with the highest accomplishment in science.

### **William R. Collings Award of Excellence**

The Dow Corning Corporation recognizes a graduate with high personal goals, superior citizenship, and potential for leadership.







# THE ACADEMIC COURSE DESCRIPTIONS 2002 - 2003

- ◆ Academic Course Information
- ◆ Academic Course Abbreviations
- ◆ Academic Course Descriptions

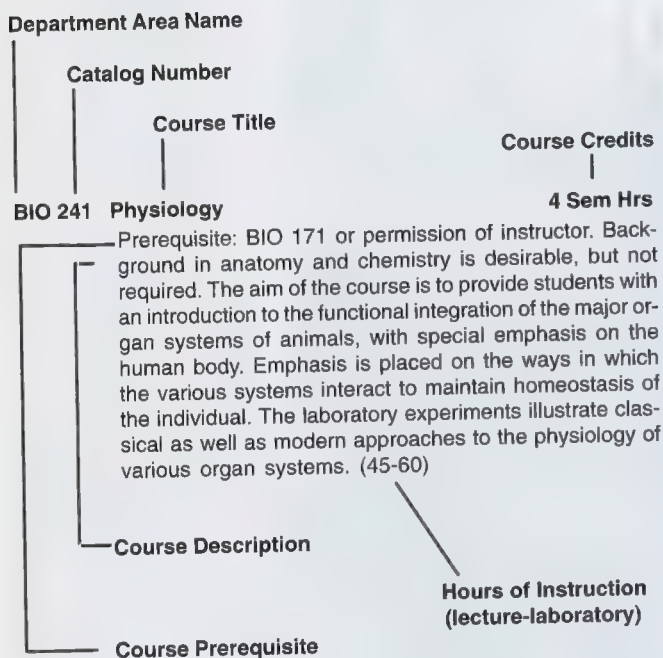
SECTION  
V



# Academic Course Information

Courses listed in this section are those which Delta College is approved to offer; however, inclusion of a course does not obligate the College to offer the course in any particular semester or year. Most of the courses listed will be offered at least once during a complete academic year. A schedule of courses is published in late February for the Spring/Summer Semester, in early March for the Fall Semester, and by late October for the Winter Semester. **Courses in this section, as well as in the Academic Class Schedule booklet published each semester, are listed in alphabetical order by subject area name according to three or four character course numbers.**

## An Example



## Course Credits

1. Each course is assigned a number of credits which generally indicates the number of hours per week the course meets. Courses with labs and occupational courses, however, generally meet more hours than the number of credits they carry.
2. Tuition rates are assessed on a per-credit-hour basis, and vary depending on your residency classification. Total tuition for each course must be paid at registration time.

## Course Prerequisites

1. Requirements which must be met or courses which must be taken before enrolling in a specific course are listed as a Prerequisite at the beginning of each course description.
2. Courses not having a prerequisite stated may be taken by any student.

## Course Descriptions

1. Below each course number and title, a brief course description is provided. You should read this description carefully to be sure you are qualified to take the course and that the course content meets your needs and interests. If you need additional information, you may contact the Chair of the Division which offers the course or the course instructor.
2. Instructors often give supplemental course information (i.e., course outline, syllabus, tasks and competencies, etc.), during the first week of classes, so students will know specific course procedures, grading criteria, and course objectives. Circumstances such as illness, inclement weather, class composition and size, or the introduction of timely material may necessitate some adjustments. The College recognizes the right of the faculty member to exercise professional judgment in making such adjustments.

## Hours of Instruction

The numbers given within parentheses at the end of each course description indicate the total number of hours each course will be scheduled within a semester. The first number specifies total lecture hours and the second number specifies total laboratory or clinical hours for the course. Skilled Trades courses, however, only have one number (clock hours), since lecture and laboratory hours have been combined.

## Course Numbering System

All Delta College academic courses have a three-digit course number. The Academic Class Schedule booklet, which is published prior to each semester, lists courses in alphabetical order by subject area name according to these three-digit course numbers.

1. Courses below 100 are considered developmental and do not meet graduation requirements.
2. Courses within the 100-199 series generally represent freshman-level courses; however, these courses may also be taken by sophomores.
3. Courses within the 200-389 series are intended primarily for sophomores; however, these courses may be taken by freshmen having the necessary prerequisites.
4. Courses within the 290-299 series designate special courses as follows: 291 Independent Study (arranged on an individual basis between student and faculty member; see Independent Study Course Information on the next page); 292-299 Special Topics/Seminars (such courses will be offered as regular courses upon demand or to meet the special needs of some programs, except CED courses).

## Honors Course Sections

Honors courses will incorporate all regular course content with added emphasis on individual learning styles, the process of learning, and the creation of products. You will be involved in problem-solving, analyzing, synthesizing, and evaluating at a higher level of abstraction. You will be expected to be more self-directed with a goal of understanding the theoretical base of the subject matter. If you enroll in honors courses, you will receive an "H" for that course on your transcript.



## Independent Study Course Information

Independent Study refers to enrollment in an appropriately-designated, variable-credit course for a specific plan of study, authorized and supervised by a consenting faculty member. Independent Study is not a substitute for regular courses, but an enrichment opportunity. Normally, it is a project designated to allow you to investigate an area of interest not within the scope of a regular course, to probe more in depth than is possible in a regular course, or to obtain an educational experience outside that normally offered by a regular course.

Guidelines for an Independent Study course are:

1. **Proposals:** The Independent Study project is normally student-initiated. Early interaction with faculty is essential in the development of a mutually-acceptable project description. At a minimum, such a description should contain an outline of the study topic, specification of the work to be done and the materials to be read, the credit to be given, the type and frequency of faculty-student contacts, and a statement of the evaluative criteria to be used by the faculty member.
2. **Approval Process:** The faculty member must accept and approve the project and then submit the agreed-upon proposal on the appropriate form to the Department Chair for approval. The granting of approval by the Department Chair may involve considerations, such as faculty workload, which go beyond the merits of the project. If the Chair approves, information copies of the form are then submitted to the Academic Dean and the Director of Records and Registration. The student may register for the project after the authorization form is received by the Director of Records and Registration.
3. **Responsibility:** Independent Study is basically a tutorial process, necessarily involving substantial faculty participation. Students are on their own when pursuing an Independent Study, because it involves no class meetings or formal lectures. The faculty member is the responsible custodian of the project, obliged to provide guidance, assistance, criticism, suggestion, and evaluation.
4. **Variable Credit:** With faculty approval, credit may vary from one to six credits.

## International Travel/Study Courses

Delta College offers international travel/study courses on an annual basis. These courses are usually offered for four credits which include a combination of lecture and field experience in group international travel; however, since the length of travel time may vary from one to four weeks, the Academic Council has approved variable credit, depending on the length of the travel field experience. Consequently, travel/study courses may vary in credits from a minimum of one to a maximum of four. These courses are numbered 268 and may be taken in various disciplines; i.e., BIO 268, ECN 268, SOC 268. The specific country/region of focus will be listed after the course number and title (SOC 268 International Studies: Australia). You may register for only one travel/study course per trip. You should consult a counselor regarding the transferability of total credits earned through international study and travel.

**Delta College reserves the right to alter, add, or delete course numbers, titles, credit hours, lecture and/or lab hours, and descriptions before expiration of this publication.**

**Non-degree credit courses (Section III, Programs of Study, Non-Degree Programs and Activities) are described in their Non-Credit Schedule of Classes, which is published prior to the beginning of each semester.**

## Learning Community Courses

Learning community courses are courses in which:

1. Disciplines are taught together (for example, literature with history, calculus with physics, criminal justice with psychology) so that the connections between them are clear.
2. You can work with other students on activities and projects.
3. You can interact with other students and teachers and be part of a closely-knit, supportive community of learners.
4. You may experience a variety of learning modes such as participating in large and small group discussions, working on activities and projects, taking field trips, and hearing lectures.
5. Students and teachers work closely together, contributing what they already know and seeking new knowledge.
6. You get to express your thoughts and ideas and to hear those of your fellow students.
7. You can gain self-confidence about yourself as a student, a thinker, a reader, a writer, a speaker, a listener.

These courses usually combine two different disciplines or areas in order to show the connections between them. They are taught by at least two instructors, each from the different disciplines or areas included in the course.

Each semester, Delta College publishes a complete list of learning community courses in the Academic Class Schedule booklet.

## Distance Learning Courses

Computers, television, and other technologies are making college degrees more easily attainable. It is now possible to earn an associate's degree by taking a combination of traditional face-to-face, telecourse and Internet courses.

**Telecourses** are meant for the independent learner. They consist of a textbook, study guide, video tapes, and are guided by a faculty member. You have access to the instructor by phone, the internet, or in person, to discuss questions when they arise. You need only to come on campus for an orientation session and the exam/review sessions. If you are a veteran or on financial aid, you should check with your counselor prior to enrolling in a telecourse.

**Internet delivered courses** are also meant for the independent learner who needs a flexible schedule. You can "attend" class when it's convenient for you. The syllabus along with links to assignments, are available on the web and classroom discussion takes place via e-mail, chat programs, and listserv. You may only have to come on campus for an orientation session and exams.

The Michigan Community College Virtual Learning Collaborative (MCCVLC) is a collaboration between Michigan community colleges that allows Delta students to take distance learning courses from other community colleges in Michigan. If a specific class is needed and Delta doesn't offer it, check out the course database on the web at [www.vcampus.mccvlc.org](http://www.vcampus.mccvlc.org). Check also with your counselor to make sure the credit will transfer back to Delta as the course you need.

Each semester, Delta College publishes a complete list of distance learning offerings in the Academic Class Schedule booklet.



# Academic Course Abbreviations

Courses in this section, as well as those in the Academic Class Schedule booklet published each semester, are listed in alphabetical order by department areas.

The subject area abbreviation appears on students' grade reports and official transcripts.

Abbreviation	Department Area	Page
ABS	Applied Behavioral Studies	105
ACC	Accounting	105
AFT	Aviation Flight Technology	106
AGM	Auto Service Education Program (ASEP)	107
ARC	Architectural Technology	107
ART	Art	108
ASL	American Sign Language	109
AST	Astronomy	109
AUT	Automotive Service	110
BIO	Biology	112
BRT	Broadcasting and Telecommunication	114
CAD	Computer Aided Drafting	115
CD	Child Development	115
CED	Cooperative Education	116
CHM	Chemistry	116
CJ	Criminal Justice	117
CNC	Computer Numerical Control	119
CPI	Chemical Process Industries	121
CSP	Central Service Processing and Distribution	121
CST	Computer Science and Information Technology	122
CT	Chemical Technology	116
DA	Dental Assisting	124
DH	Dental Hygiene	125
DMS	Diagnostic Medical Sonography	126
DRF	Drafting	127
ECN	Economics	128
ED	Education	128
EDD	Electronic Distribution Design	128
EET	Electronic Engineering Technology	129
EGR	Engineering	129
EM	Electronic Media	130
EMS	Emergency Medical Technology	130
ENG	English	130
ENV	Environmental Science	131
FR	French	132
FST	Fire Science Technology	132
GB	General Business (see Management)	146
GE	German	134
GEO	Geography	134
GLG	Geology	135
HIS	History	136
HSC	Health Science	137
HSR	Human Services	137
ID	Interior Design	137

Abbreviation	Department Area	Page
IHU	Interdisciplinary Humanities	138
SCI	Interdisciplinary Science	161
IS	Industrial Supervision	138
ITE	Industrial Technology Education	139
LAS	Legal Support	139
LIB	Library Skills	140
LIT	Literature	140
LW	Lifelong Wellness	141
LWT	Lifelong Wellness Theory	144
MDA	Mechanical Design Automation	145
MFG	Manufacturing Technology	145
MGT	Management	146
MS	Machine Tool Operations	147
MT	Mechanical Technology	148
MTH	Mathematics	149
MTP	Massage Therapy	150
MUS	Music	150
NT	Nursing Transition	151
NUR	Nursing (RN)	151
OAT	Office Administration & Technology	152
PHL	Philosophy	153
PHM	Pharmacology	154
PHO	Photography	154
PHY	Physics	155
PNE	Practical Nursing Education	155
POL	Political Science	155
PSC	Physical Science	156
PSY	Psychology	156
PTA	Physical Therapist Assistant	156
QA	Quality Assurance	157
RAD	Radiography	157
RC	Residential Construction	159
RHA	Refrigeration/Heating & Air Conditioning	159
RT	Respiratory Care	160
RUS	Russian	161
SCI	Interdisciplinary Science	161
ASL	Sign Language (American)	109
SFA	Surgical First Assistant	161
SK--	Skilled Trades	165
SOC	Sociology	162
DMS	Sonography, Diagnostic Medical	126
SPA	Spanish	163
SPH	Speech/Oral Communications	163
ST	Surgical Technology	164
WET	Water Environment Technology	171
WELD	Welding Engineering	170



# Course Descriptions

## APPLIED BEHAVIORAL STUDIES COURSES

### ABS 090A Successful Transitions A 1 Sem Hr

Explores internal and external factors that affect college success. Examines the knowledge, attitudes and skills needed to increase self-awareness and confidence; self regulation and responsibility; motivation and productive personal goals. Develops knowledge in creating effective habits in a supportive, student-centered class, and increases competence in effectively interacting with others. Does not earn credit toward graduation. Recommended for students needing or taking ENG 090, ENG 107, or ENG 108 and students who realize a need for further self-development. (15-0)

### ABS 090B Successful Transitions B 1 Sem Hr

Prerequisite: ABS 090A. Encourages student-oriented discussion, practice and application of personal and social success skills learned in ABS 090A. Focuses on time management, assertive communication, peer interaction and support, problem solving, collaborating, and cooperation. Does not earn credit toward graduation. Recommended for students needing or taking ENG 090, ENG 107, ENG 108 or ENG 109 and students who recognize their need to continue to increase their strategies for college success. (15-0)

### ABS 097 Student Success Strategies 4 Sem Hrs

Develops knowledge of strategies of using information about: 1) study skills such as notetaking, test preparation and test taking, effective textbook reading and review, memory, presentation and writing-to-learn strategies, and critical thinking; 2) Life skills such as self-assessment of strengths and weaknesses, learning style, health, time management, stress management, relationships, self-esteem, responsibility, and goal setting; 3) Delta resources such as the library and electronic indexes, and Teaching/Learning Center. Aids in understanding the transition to the expectations of academic culture. Does not earn credit toward graduation. Recommended for students whose assessment scores indicate skills in ENG 090, ENG 108 or ENG 109 range. Credit may be earned in only one of the following: ABS 097 or the combination of ABS 098, 099 and 100. (All three must be successfully completed to be equivalent to ABS 097.) (60-0)

### ABS 102 The Job Hunt 1 Sem Hr

Develops skills in identifying students' job-related abilities and attitudes; locating leads in the job market; writing resumes and cover letters; completing applications and interviewing. (15-0)

### ABS 103 Career Decision Making 1 Sem Hr

A group seminar to help students discover and actualize their unique capabilities, strengths, talents, and abilities. The seminar will enable each student to learn about the variables that are important in making an occupational decision. (15-0)

### ABS 104 Behavior Change I 1 Sem Hr

Assists students in identifying, examining, and changing their self-limiting thoughts, attitudes, and behaviors. Examines the socialization process and the development of the social self, as they apply to personal, and individual change. Develops a plan for change. (15-0)

### ABS 105 Behavior Change II 1 Sem Hr

Prerequisite: ABS 104. Applies the Take Charge Theory to students, to others and to situations primarily through group activities. Reviews the American Socialization Process, explores social behavioral theories as they apply to personal change and growth, and practices the process of Creative Mental Imagery. (15-0)

### ABS 108 Becoming a Master Student 2 Sem Hrs

Assists students in obtaining skills critical to their college success. Demonstrates and practices strategies in test taking, note taking, memory, textbook reading, and critical and creative thinking. Explores life skills related to college success, such as personal responsibility; relationship building; health, money, time and stress management; and college resources. Students enrolled in or needing ENG 100, ENG 107, or ENG 108 are recommended to take ABS 100. Credit may be earned in only one of the following: ABS 100, ABS 101, ABS 108 or ABS 292. (30-0)

### ABS 108A Becoming A Master Student/Plus Practice

3 Sem Hrs

Combines the goals of ABS 108 with additional time for individual attention to student needs in using study and life skills practice. Recommended for students who want or need additional practice and instructor feedback or who are coming back to school after an extended absence and whose assessment scores indicate skills in ENG 111A range. Credit may be earned in only one of the following: ABS 101, ABS 108 or ABS 108A or ABS 292. (45-0)

### ABS 113 Career Decision Making for Adults in Transition

1 Sem Hr

Prerequisite: ENG 109 or appropriate score on assessment or permission of the instructor. Explores the results of and opportunities available for adults in career transitions. Provides experience in the steps involved in the career decision making process through students working in a cooperative, respectful group atmosphere. Investigates personal values, skills, interests and abilities and explores a variety of careers using campus resources. Matches the student's personal characteristics with careers and creates a plan of action to accomplish short and long range career goals. (15-0)

### ABS 290-299 Special Projects in Applied Behavioral Science

## ACCOUNTING COURSES

### ACC 111 Introductory Accounting 4 Sem Hrs

Basic accounting practices and procedures, including journalizing, posting, preparation of financial statements, special journals, subsidiary ledgers, petty cash fund, bank reconciliation, and payroll accounting. Completion of a practice set is required. Transfer students should take ACC 211. Credit may only be earned in either ACC 111 or in 211 but not in both. (60-0)

### ACC 115 Applied Tax - H&R Block 5 Sem Hrs

A practical course dealing with mastery of current tax law. Students apply their knowledge by constant completion of federal and state forms relating to such topics as deductions, credits, self-employment, farms, rentals, pensions and capital gains. H&R Block issues a Certificate of Accomplishment to students who average grades of 70% or more in the course. (75-0)

### ACC 211 Principles of Accounting I 4 Sem Hrs

Prerequisite: MTH 097 or the appropriate score on the college's current assessment instrument. Introduces basic concepts of accounting principles. Includes the accounting cycle for service and merchandising businesses, internal control, accounting for current assets, long-term assets, current liabilities, and owner's equity. Completion of a practice set required. Credit may only be earned in ACC 111 or 211 but not both. (60-15)

### ACC 212 Principles of Accounting II 4 Sem Hrs

Prerequisite: ACC 211 with a "C" (2.0) minimum grade. Includes a study of corporation basic theory and methodology, statement of cash flows, accounting for manufacturing operations, and accounting data as used in performance measurement, decision making, planning, and control. (60-15)

### ACC 214 Microcomputer Accounting Applications

4 Sem Hrs

Prerequisite: CST 133 or CIS 133 and ACC 111 or ACC 211. An introduction to microcomputer applications in general ledger, accounts receivable, accounts payable, payroll, and inventory/invoicing. Electronic spreadsheet applications will be developed using appropriate software. Outside laboratory assignments will be given. (60-0)

### ACC 215 Federal Tax Accounting 3 Sem Hrs

Prerequisite: ACC 212. Studies the Federal income tax law. Emphasizes the application to the individual and the sole proprietorship business, with some references made to the corporation. Includes preparation of individual tax returns. (45-0)



**ACC 223 Accounting Practices/Working Capital 4 Sem Hrs**  
Prerequisite: ACC 212 and ACC 214 with grades of "C" (2.0) or better. Discusses current assets and current liabilities. Includes journalizing, in-depth study of cash and internal control, receivables, current liabilities, error analysis, statement analysis, payroll taxes, and sales tax. Completion of three major projects is required. (60-0)

**ACC 224 Accounting Practices/Long-Term 4 Sem Hrs**  
Prerequisite: ACC 212 and ACC 214 with grades of "C" (2.0) or better. Discusses long-term assets and equities. Includes journalizing, plant assets, depreciation, notes, stockholders' equity, time value of money, error analysis, statement analysis, and statement of cash flows. Completion of three major projects is required. (60-0)

**ACC 227 Intermediate Accounting I 4 Sem Hrs**  
Prerequisite: ACC 212 with a "C" (2.0) minimum grade or equivalent. Includes a study of accounting processes, theory, and principles. Includes financial statement presentation, valuation of current assets, property plant and equipment, intangible assets, and time value of money. Designed for 3+1 transfer Universities. (60-0)

**ACC 228 Intermediate Accounting II 4 Sem Hrs**  
Prerequisite: ACC 212 with a "C" (2.0) minimum grade or equivalent. Presents accounting for current liabilities, stockholders' equity, EPS, income taxes, pensions, leases, long-term liabilities, revenue recognition, and the statement of cash flows. Designed for 3+1 transfer Universities. (60-0)

**ACC 233 Cost Accounting 3 Sem Hrs**  
Prerequisite: ACC 212 with a "C" (2.0) minimum grade. Relates principles and methods of handling materials, labor costs, and manufacturing expenses to the formulation of reports to management. Includes job order, process, standard, direct and budgetary costing procedures. (45-0)

**ACC 235 Financial Management 3 Sem Hrs**  
Prerequisite: ACC 212 with a "C" (2.0) minimum. An introduction to the basic concepts of financial management. Includes goals and functions of financial management, financial forecasting, leverage, working capital management, time value of money, stock and bond valuation, cost of capital, capital budgeting, and concept of risk. (45-0)

#### **ACC 290-299 Special Projects in Accounting**

### **AVIATION FLIGHT TECHNOLOGY COURSES**

**AFT 101 Private Pilot Ground Training 4 Sem Hrs**  
Provides the basic principles of the aeronautical knowledge necessary to meet the requirements for a Private Pilot – Airplane Knowledge Exam. Includes principles of aerodynamics, airplane performance, airplane instruments, engines, and systems, airports and Air Traffic Control, weight and balance calculations, weather, Federal Aviation Regulations, aeronautical navigation charts and navigation, and principles of flight physiology. (60-0)

**AFT 105 Primary Pilot Flight Training I 2 Sem Hrs**  
Prerequisite: Completion of or concurrent enrollment in AFT 101 and coordinator permission. Provides knowledge, skills, and aeronautical experience necessary to meet the requirements for solo flight. Includes flight training for the following procedures and maneuvers: proper flight procedures, taxiing or surface operations, takeoffs and landing, straight-and level flight and turns, climbs and climbing turns, airport traffic patterns, collision avoidance, windshear avoidance, and wake turbulence avoidance, descents, flight at various airspeeds, stall entries from various flight attitudes and power combinations, emergency procedures, ground reference maneuvers, approaches to a landing area with simulated engine malfunctions, slips to a landing, and go-arounds. A written exam must be completed and reviewed by the instructor before authorization to conduct a solo flight can be given. Special fees for flight instruction and aircraft rental must be paid by student. (20-50)

**AFT 106 Primary Pilot Flight Training II 3 Sem Hrs**  
Prerequisite: AFT 105 with a "C" (2.0) minimum grade and coordinator permission. Provides knowledge, skills and aeronautical experience necessary to meet the requirements for the FAA Practical Test Standards-Private Pilot Airplane Single-engine land. Includes pilotage and dead reckoning, navigation systems and radar services, diversions, and lost procedures, and cross-country flights, night preparation, night takeoffs and landings, and night cross-country flight and high performance takeoffs and landings. (20-25)

**AFT 201 Instrument Pilot Ground Training 4 Sem Hrs**  
Prerequisite: AFT 101 or equivalent and coordinator permission. Prepares students for Federal Aviation Administration Instrument-Rating-Airplane knowledge test leading to the addition of an instrument rating to a Private or Commercial Pilot Airman Certificate. Emphasizes airplane instruments, air traffic control, Federal Aviation Regulations, instrument flight operations, en route and approach charts, and IFR trip planning and navigation, aviation weather, and flight physiology. (60-0)

**AFT 202 Aviation Meteorology 2 Sem Hrs**  
Focuses on fundamental weather processes impacting aviation. Includes sources for weather data important for flight planning including text observations and forecasts, graphical charts and analyses, and radar. Emphasizes weather-related hazards to aviation including thunderstorms. (30-0)

**AFT 210 Commercial Pilot Ground Training 4 Sem Hrs**  
Prerequisites: AFT 101 with a "C" (2.0) grade minimum or equivalent and coordinator permission. Prepares students for the Federal Aviation Administration Commercial Pilot knowledge test required for a Commercial Pilot Airman Certificate. Includes airplane and aerodynamics, airplane performance, aircraft instruments, engines and systems, airports, airspace and Air Traffic Control, weight and balance computations, meteorology, Federal Aviation Regulations, navigation, flight physiology, and commercial flight operations. (60-0)

**AFT 215 Advanced Pilot Flight Training I 2 Sem Hrs**  
Prerequisite: AFT 106 with a "C" (2.0) minimum grade, previous or concurrent enrollment in AFT 201 and coordinator permission. Provides student with foundation in attitude instrument flight and instrument navigation. Prepares student for introduction of Instrument Flight Rules (IFR) enroute procedures by performing simulated instrument approaches and holding patterns. Special fees for flight instruction and aircraft rental must be paid by students. (30-26)

**AFT 216 Advanced Pilot Flight Training II 3 Sem Hrs**  
Prerequisite: AFT 215 with a "C" (2.0) minimum grade and coordinator permission. Provides instruction in Instrument Flight Rules (IFR) en route procedures with Air Traffic Control to attain proficiency level of Instrument Rated Pilot. Provides knowledge, skills, and aeronautical experience necessary to meet the requirements for the FAA Practical Test Standards – Instrument Pilot Airplane. Special fees for flight instruction and aircraft rental must be paid by student. (25-20)

**AFT 217 Advanced Pilot Flight Training III 2 Sem Hrs**  
Prerequisite: AFT 106 with a "C" (2.0) minimum grade and coordinator permission. Includes extensive review and practice in Visual Flight Rules (VFR) cross-country procedures and maximum performance maneuvers. Develops night orientation, night cross-country procedures, complex airplane operations and precision flight maneuvers to Commercial Pilot standards. Special fees for flight instruction and aircraft rental must be paid by student. (35-34)

**AFT 218 Advanced Pilot Flight Training IV 3 Sem Hrs**  
Prerequisite: AFT 217 with a "C" (2.0) minimum grade and coordinator permission. Develops night orientation, night cross-country procedures, complex airplane operations and precision flight maneuvers to Commercial Pilot standards provides knowledge, skills and aeronautical experience necessary to meet the requirements for the FAA Practical test Standards-Commercial Pilot Airplane. Special fees for flight instruction and aircraft rental must be paid by student. (25-25)

#### **AFT 290-299 Special Projects in Aviation**



## AUTO SERVICE EDUCATION PROGRAM (ASEP) COURSES

### AGM 131 Automotive Electronics 4 Sem Hrs

Introduces the operation, maintenance, and service of battery, charging, starting systems, and GM electrical and electronic systems. Credit may be earned in AGM 131 or SKGM 131, but not both. (36-64)

### AGM 132 Brakes, ABS & TCS Service 5 Sem Hrs

Introduces the operation, maintenance, and service of GM base brakes, anti-lock and traction control. Presents general auto lab equipment operation and stresses safety. Credit may be earned in AGM 132 or SKGM 132, but not both. (45-80)

### AGM 133 Steering and Suspension Service 6 Sem Hrs

Introduces the operation, maintenance, and service of GM steering and suspension systems. Credit may be earned in AGM 133 or SKGM 133, but not both. (54-96)

### AGM 134 Dealership Work Experience I 2 Sem Hrs

Provides work experience in the operation, maintenance, and service of GM base brakes, steering, suspension, and electrical systems particularly battery, charging and starting systems. Stresses general auto lab equipment operation and safety. (0-600)

### AGM 141 Specialized Engine Repair 6 Sem Hrs

Prerequisite: AGM 134. Introduces the operation, maintenance, and service of GM engines for mechanical performance. Stresses proper repair techniques and diagnosis of engine noises. Credit may be earned in AGM 141 or SKGM 141, but not both. (54-96)

### AGM 142 Electronic Engine and Emission Controls Service 9 Sem Hrs

Prerequisite: AGM 134. Introduces the operation, maintenance, and service of GM engines for drivability performance. Stresses proper repair techniques and diagnosis of engine drivability problems. Credit may be earned in AGM 142 or SKGM 142, but not both. (81-144)

### AGM 143 Dealership Work Experience II 2 Sem Hrs

Prerequisite: AGM 134. Provides work experience in the operation, maintenance, and service of GM engines for mechanical and drivability performance. Stresses basic spark, fuel, and emission control systems. (0-600)

### AGM 231 Driveline and Manual Trans Service 3 Sem Hrs

Prerequisite: AGM 143. Introduces the operation, maintenance, and service of GM manual transmissions, transfer cases, propshafts and final drive units. Credit may be earned in AGM 231 or SKGM 231, but not both. (27-48)

### AGM 232 Automatic Electronic Transmissions Service 8 Sem Hrs

Prerequisite: AGM 143. Introduces the operation, maintenance, and service of GM electronically controlled transmissions. Credit may be earned in AGM 232 or SKGM 232, but not both. (72-128)

### AGM 233 HVAC Service 4 Sem Hrs

Prerequisite: AGM 143. Introduces the operation, maintenance, and service of GM Heating, Ventilation, and Air Conditioning systems and their controls. Credit may be earned in AGM 233 or SKGM 233, but not both. (36-64)

### AGM 234 Dealership Work Experience III 2 Sem Hrs

Prerequisite: AGM 143. Provides work experience in the operation, maintenance, and service of GM manual and automatic heating, ventilation and air conditioning systems, automatic transmissions, and drivelines. Stresses proper handling of refrigerant and safety. (0-600)

### AGM 241 Body Electronics Service 4 Sem Hrs

Prerequisite: AGM 234. Stresses the operation, diagnosis and service of GM body electrical and electronics systems. Credit may be earned in AGM 241 or SKGM 241, but not both. (40-40)

### AGM 290-299 Special Projects in Auto Service Education

## ARCHITECTURAL TECHNOLOGY COURSES

### ARC 101 Materials and Methods of Construction 3 Sem Hrs

Introduces basic construction materials, properties, recommended use, space requirements, methods of finishing, building code implications, and energy conservation applications. Credit may be earned in ARC 101 or ARC 102 but not both. (45-0)

### ARC 105 Architectural Drafting I 4 Sem Hrs

Teaches fundamentals of architectural drafting including linework emphasis, lettering design, symbol applications, multiview projections relative to architectural drawings, one point perspective, two point perspective, graphic design elements, and presentation of floor plans, sections and elevations. Studies space requirements and method or representing basic residential elements. Includes demonstrations and instruction in basic procedures of CAD. Credit may be earned in ARC 105 or ARC 109 but not in both. (45-45)

### ARC 106 Architectural Drafting II 4 Sem Hrs

Prerequisite: ARC 105 or permission of instructor. Introduction to construction drawing organization. Development of coordinated drawings for one small building with emphasis on application of notes, dimensions, and development of graphic skills. Includes a study of CAD techniques and the use of the computer for drawing production, storage and retrieval, development of selected architectural details relating to foundation, floor, wall, and roof assemblies, with emphasis on energy conservation. (45-45)

### ARC 111 Mechanical and Electrical Systems for Buildings 3 Sem Hrs

Prerequisite: ARC 101. Fundamentals and operating principles of air conditioning, plumbing, and electrical systems; including typical layout, calculations, sizing, and methods of installation. Credit may be earned in ARC 111 or ARC 206 but not in both. (45-0)

### ARC 114 Architectural AutoCAD 2D Basics 2 Sem Hrs

Prerequisites: Previous drafting experience or course work with instructor permission; ARC 105 prior to or concurrently. Introduces 2D AutoCAD drawing, including: Basic drawing and editing commands applied to new and existing architectural drawings, basic drawing prototype setup, DOS and windows operation procedures, saving drawings to hard disks and floppy disks, printing drawings to laser printers and pen plotters, completion of floor plan, section, and elevation drawings. Introduces add on architectural software for generating automatic architectural elements for inclusion into architectural drawings. Credit may be earned in ARC 114 or CAD 114 but not in both. (30-0)

### ARC 118 AutoCAD Applications 3 Sem Hrs

Prerequisite: ARC 114. Uses and expands on commands learned in ARC 114, AutoCAD Basics. Accomplishes this through the development of various additional working drawings such as elevations, sections and details. (45-0)

### ARC 204 Estimating Building Construction 3 Sem Hrs

Prerequisite: ARC 101. Introduces methods and procedures commonly used in determining the costs of construction materials. Credit may be earned in ARC 204 or ARC 202 but not in both. (45-0)

### ARC 205 Architectural Drafting III 3 Sem Hrs

Prerequisite: ARC 106. Develops construction documents for a non-residential building. Introduces concrete, masonry, and steel construction with their various detailing requirements, symbolisms, and characteristics utilized in installation of mechanical and electrical systems. Includes a study of computer-aided design examples. (15-90)

### ARC 206 Architectural Drafting IV 3 Sem Hrs

Prerequisite: ARC 205. Develops sketches into preliminary and construction drawings. Uses CAD for design and drafting examples and production. Continues the design and drafting of concrete, masonry, and steel construction. Integrates structural, mechanical, electrical, and solar strategies into commercial buildings. (15-90)

**ARC 211 Elements of Structural Design 2 Sem Hrs**  
Prerequisite: MTH 097 or equivalent Asset/Compass scores. Bridges the gap of understanding between engineering and building contractors. Identifies the weights of construction materials. Analyzes loads, stresses, and deflections of beams, floor joists, roof trusses and columns. Provides basic design experience in wood, steel, and concrete. Credit may be earned in ARC 211 or ARC 211, but not in both. (30-0)

**ARC 214 Architectural AutoCAD 3D Basics 3 Sem Hrs**  
Prerequisites: ARC 114, CAD 114, or a working knowledge of AutoCAD and permission of the instructor. Introduces 3D AutoCAD drawing, including: Conversion of 2D drawings to 3D, user coordinate system (UCS) manipulation, line extrusion, 3D faces, dynamic viewing, paper space viewing and printing, shading, hiding, simplified methods of architectural presentation. Continues study of 2D techniques with application to 3D objects. Introduces add on software for generating automatic architectural elements (currently KETIV brand software is used) including: doors, windows, stairs, roofs, cross sections, and predawn architectural icons (cars, plants, people, furniture, etc.) (45-0)

**ARC 221 Site Preparation 3 Sem Hrs**  
Studies fundamentals of site analysis, including utility services, metes and bounds, solar access and restrictions. Teaches elements of surveying including use of instruments, leveling, measurement of angles and distances, contours, location of site elements and development of a site plan from field data. Interprets engineering surveys, introduces landscape design, and studies computer aided design examples. Credit may be earned in ARC 221 or ARC 105 but not in both. (45-0)

**ARC 251 History of Architecture 2 Sem Hrs**  
Teaches the historical development of architecture as a major art form. Views this development in relation to man's knowledge of building techniques and available materials as affected by geographic, economic, political and religious influences. Credit may be earned in ARC 251 or ARC 251, but not both. (30-30)

**ARC 314 Architectural Rendering Basics 3 Sem Hrs**  
Prerequisite: ARC 214 or working knowledge of AutoCAD and permission of the instructor. Introduces 3D studio VIZ rendering mechanisms/AutoCad rendering mechanisms. Operates camera angles, creates light sources, digital materials and applies existing digital materials to 3D model from ARC 214. Introduces rendering techniques in both 3D studio VIZ and AutoCAD. Renders bitmap image for final class project. Continues, from ARC 214, to next logical sequential rendering level. (45-0)

#### ARC 290-299 Special Projects in Architectural Technology

### ART COURSES

**ART 105 Art Experience 3 Sem Hrs**  
Designed for students not majoring in Art to provide an enriching experience to two- and three-dimensional media: to include drawing, painting, graphic media, clay and other sculptural media. It is designed primarily for the general degree student who wishes to have some art experience. There will also be an emphasis on art appreciation. (15-45)

**ART 111 Drawing I 3 Sem Hrs**  
A beginning course in drawing designed for all students interested in the fundamentals of visual form and analysis of structure. Representational treatment of objects, forms, and volumes in line, value, and texture with a variety of media. (0-90)

**ART 112 Drawing II 3 Sem Hrs**  
Prerequisite ART 111. A continuation of ART 111 emphasizing composition and further understanding of the elements of drawing in relation to individual expression. Problems involve a variety of media. (0-90)

**ART 113 Art Education I 3 Sem Hrs**  
Introduction to art for prospective teachers. Develops the ability to stimulate the creative interests of children in art. Acquaints the student with a variety of methods and materials adjusted to various grade levels. (0-90)

**ART 114 Art Education II 3 Sem Hrs**  
Prerequisite: ART 113. A continuation of ART 113. Additional investigation of the theories of art education and creative growth of children. (0-90)

**ART 115 Basic Design — Two Dimensional 3 Sem Hrs**  
Experiments with the basic elements of design: line, form, space, value, textures, and color utilizes. A variety of media in developing a visual vocabulary and understanding of art elements and composition. (0-90)

**ART 116 Basic Design — Three Dimensional 3 Sem Hrs**  
A series of problems designed to explore the elements of design in spatial compositions using a variety of basic materials. (0-90)

**ART 151 Art History and Appreciation I 3 Sem Hrs**  
Required of all first-year art majors. Surveys Western art from Prehistoric times to the Renaissance. Deals with major works and artists of the Prehistoric, Ancient, Classical and Medieval cultures. Emphasizes the architecture and sculpture of these periods. (45-0)

**ART 152 Art History and Appreciation II 3 Sem Hrs**  
Required of all first-year art majors. Surveys the history of Western art from the Renaissance through Baroque, neo-classicism, Romanticism, Impressionism, Expressionism and various modern schools. Emphasizes the painting of those periods. (45-0)

**ART 210 Figure Drawing 3 Sem Hrs**  
Prerequisite: ART 111. A study of the aspects of life drawing such as gesture, mass, proportions, and structure. Essentially for the art major. (0-90)

**ART 217 Painting I 3 Sem Hrs**  
Prerequisites: ART 111, 115. Experimentation in acrylic media. Techniques, composition, and color are explored in relation to object references, landscape, figure and nonobjective work. (0-90)

**ART 218 Painting II 3 Sem Hrs**  
Prerequisite: ART 217. A continuation of the painting experience on a more advanced level. Major emphasis on developing a more personal painting style and an understanding of the artist's role in the arts today. (0-90)

**ART 222 Sculpture 3 Sem Hrs**  
Prerequisite: ART 115 or 116 or permission of instructor. An introduction to a variety of sculptural concepts and techniques utilizing a variety of media. (0-90)

**ART 231 Ceramics I 3 Sem Hrs**  
Introductory study of clay, glazes, and their applications, and techniques of wheel and hand construction through the process of low temperature Raku firing. Course fee required. (0-90)

**ART 232 Ceramics II 3 Sem Hrs**  
Prerequisite: ART 231 or permission of instructor. Ceramics II uses high-fire stoneware clay bodies and introduces firing techniques with high fire glazes. The techniques learned in Ceramics I are employed and are expanded to create a variety of well-developed utilitarian and sculptural forms. Course fee required. (0-90)

**ART 251 History of Architecture 2 Sem Hrs**  
Teaches the historical development of architecture as a major art form. Views this development in relation to man's knowledge of building techniques and available materials as affected by geographic, economic, political, and religious influences. Credit may be earned in ARC 251 or ARC 251, but not in both. (30-0)

**ART 255 Art of the 20th Century 3 Sem Hrs**  
An exploration of the visual arts of our century, with an emphasis on the current arts in America. (45-0)

**ART 260 The Business of Art 3 Sem Hrs**  
Designed to acquaint the professional artist or advanced hobbyist with current business realities of art. Topics included are: self-promotion and marketing, grants, gallery contracts, networks, professional aspects, self-evaluation, career goal setting, tax and legal considerations. Journal, visits to galleries required. (45-0)



**ART 261 Contemporary Art in Chicago 2 Sem Hrs**  
Surveys contemporary art forms, processes, and ideas of the international art market in a 3-day visit to Chicago which will include the International Art Fair, the Chicago Art Institute and the Contemporary Museum of Art. Students pay tuition plus all of their expenses. (30-0)

**ART 271 Digital Imaging: Photo-Shop 3 Sem Hrs**  
ART 115 or PHO 101 recommended. Presents technical aspects/skills of Adobe-Macintosh software with an arts emphasis toward developing aesthetic awareness. Explores photo manipulation, re-touching, multiple layering, combining images with text, black and white and color images, scanning techniques, CD-ROM and other methods of storage and output. (0-90)

**ART 271B Photoshop II 3 Sem Hrs**  
Prerequisite: ART 271. Continues to explore photographic manipulation using advanced methods of computer imaging with the "Photoshop" software program. Explores advanced scanning techniques, separation methods for prepress applications, CD ROM as resource and storage of photographic images, video and digital capture devices, service bureaus and output devices, channels, masking, and layer manipulation. Emphasizes aesthetic awareness in the art of image making. (0-90)

**ART 276 QuarkXPress 3 Sem Hrs**  
Introduces students to the capabilities and applications of QuarkXPress page layout software. Builds on a knowledge of PageMaker to strengthen design and layout skills. Addresses file management techniques and advances students to preparing output-ready files for high-end output devices at service bureaus and commercial printing companies. Familiarity with Adobe Photoshop, Adobe Illustrator or other graphics creation software helpful. (0-90)

**ART 277 Illustrator 3 Sem Hrs**  
Presents the use of Illustrator software including design and technical aspects, and the relationship to other graphic applications in the printing industry. (0-90)

**ART 278 Electronic Pre-Press 3 Sem Hrs**  
Prerequisite: ART 271, ART 273 or 276, ART 277. Covers all aspects of preparing computer design work for the printer from start to finish. (45-0)

**ART 279 Web Page Design Arts 3 Sem Hrs**  
Prerequisite: ART 271. Covers fundamental web and internet concepts and how to adapt and extend basic design principles to web design using the Adobe Go Live Studio software application. (0-90)

**ART 280 Printmaking 3 Sem Hrs**  
Prerequisite: ART 111 and 115. A study of the art of printmaking and its major techniques; with studio practice in a variety of printing methods. The techniques taught are basically art skills useful to artists. (0-90)

**ART 282 Multimedia Performance Art 3 Sem Hrs**  
Prerequisites: ART 111 or ART 115 or PHO 100 or PHO 101 or permission of the instructor. Explores visual methods of expression and production beyond traditional boundaries of any single media. Uses an interdisciplinary approach to create an electronic/video, slide, and sound production based upon student generated and instructor guided issues currently vital in the process and products of art today. Uses the high-tech multi-screen Delta College Planetarium for final performances. (45-0)

**ART 283 Macromedia Director 3 Sem Hrs**  
Prerequisites: ART 271. Employs Macromedia's Director as the primary application. Presents Director fundamentals and how to make a movie—the term used to describe any multimedia production created in Director. Concentrates on using basic Director techniques to create animation, interactive movies, marketing presentations, technical simulations, kiosks, and full-scale commercial productions. The student should have a strong working knowledge of Adobe Photoshop and Illustrator to be able to create high-end presentations. (0-90)

**ART 284 Typography 3 Sem Hrs**  
Prerequisites: ART 111 and ART 115. Introduces typographic principles, guidelines and related terminology. Examines type, its classification, measurement systems and methods of specification. Explores various typographic applications including use of grid systems and the development of visual hierarchy of information. (45-45)

**ART 285 Flash 3 Sem Hrs**  
Prerequisites: ART 271 and ART 277. Introduces Macromedia's Flash authoring environment. Explores various ways to create interactive animation for the web or as stand alone CDs. Examines Flash's web multimedia capabilities. (30-60)

**ART 289 Advanced Studio Projects 3 Sem Hrs**  
Designed for advanced students who have completed all coursework in their discipline. Emphasizes group collaboration in a studio environment across several art disciplines. Focuses on the added-value elements that result from interaction in a community of advanced artists sharing views, perspectives, on differing media. Requires completion of individually agreed-to project and participation in planning and arranging/ staging a group exhibition. (45-0)

#### ART 290-299 Special Projects in Art

See also - Photography courses

### AMERICAN SIGN LANGUAGE COURSES

**ASL 111 American Sign Language I 3 Sem Hrs**  
Introduces the student to American Sign Language, the language many deaf or hearing impaired adults use. Incorporates the deaf culture throughout the course. Credit may be earned in SL 111 or ASL 111 but not in both. (45-0)

**ASL 112 American Sign Language II 3 Sem Hrs**  
Prerequisite: SL 111 or ASL 111 or demonstrated basic knowledge of American Sign Language. Builds upon skills, knowledge, and vocabulary gained in SL 111 or ASL 111, while increasing conversational fluency. Credit may be earned in SL 112 or ASL 112 but not in both. (45-0)

**ASL 113 American Sign Language Fingerspelling 1 Sem Hr**  
Prerequisite: ASL 111 or permission of the instructor. Focuses on fingerspelling as a part of the communication process of American Sign Language. Addresses expressive and receptive skills. Meets the needs of varying skill levels. (15-0)

**ASL 211 American Sign Language III 4 Sem Hrs**  
Prerequisite: SL 111 or ASL 111, SL 112 or ASL 112 or demonstrated knowledge of American Sign Language. Builds upon skills, knowledge, vocabulary and linguistics gained in previous classes. Exposes student to more intense American Sign Language, with more emphasis on expressive skills than previous courses. Continues exploration of Deaf culture. (60-0)

**ASL 212 American Sign Language IV 4 Sem Hrs**  
Prerequisites: SL 121 or ASL 211 or demonstrated knowledge of American Sign Language. Concludes sequence of sign language courses. Provides opportunity to develop advanced skill, fluency and vocabulary. Deals with issues related to Deaf culture. Includes information flow and expression beyond repetition and replication. Credit may be earned in SL 122 or ASL 212 but not in both. (60-0)

#### ASL 290-299 Special Projects in American Sign Language

### ASTRONOMY COURSES

**AST 111 Introduction to Astronomy 3 Sem Hrs**  
Familiarizes the student with the origin, characteristics, and evolution of the solar system, the stars, the galaxies, and the universe. Emphasizes the way in which our understanding of the universe has changed. Credit may be earned in AST 111 or PHY 100 but not both. (45-0)

**AST 111L Astronomical Investigation** 1 Sem Hr  
Prerequisite: AST 111 or concurrent enrollment. Includes experimental design to investigate such events as the night sky, planetary motion, and astronomical laws. Explores use of telescopes and spectrometers in establishing the relationship among planets in the solar system, star distances, and stellar life cycles. (0-30)

**AST 290-299 Special Projects in Astronomy**

**AUTOMOTIVE SERVICE COURSES**

**AUT 100 Introduction to Automotive Service** 3 Sem Hrs  
Units of instruction will emphasize orientation to the Automotive Service facility, basic tools and equipment, service publications, safety practices and professionalism. An introduction to the automobile and its components will concentrate on terminology and general component operation. (30-25)

**AUT 101 Understanding Your Automobile** 2 Sem Hrs  
Intended to help you keep your car, van, or light truck in good operating condition. Topics include: the owner's manual, regular maintenance, emergency repairs, buying a new/used vehicle, or parts, selecting a repair facility, recognizing trouble signals, driving techniques, and the Michigan law for consumers and repair facilities. Not for auto majors. (30-0)

**AUT 108 Introductory Automotive Electronics** 3 Sem Hrs  
Studies automotive electrical and electronic fundamentals, magnetism, and electrical test equipment, terminology, operation, and diagnosis. Develops skills in establishing an electrical base for advanced electrical/electronic courses and in controlled learning experiences with basic electricity and electronics using meters and test equipment. (35-25)

**AUT 110 Automotive Electronics I** 4 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies electrical test equipment, battery, wiring diagram, starting and charging system terminology, operation, and diagnosis. Develops skills in diagnosis of battery, diagnosis and repair of starting and charging systems and application of wiring diagrams. (40-40)

**AUT 110A Automotive Battery and Service** 1 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Areas of study will involve passenger car and light truck battery terminology, operation, and diagnosis. Skill development will be focused on diagnosis of battery problems and use of specialized battery test equipment. This course is also designed to improve students' communication, math, decision-making, thinking, reading, writing, ethics and team building skills. (10-10)

**AUT 110B Automotive Starting System Service** 1 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Areas of study will involve passenger car and light truck starting system terminology, operation, and diagnosis. Skill development will be focused on diagnosis and repair of starters and starting system circuit components. This course is also designed to improve students' communication, math, decision-making, thinking, reading, writing, ethics, and team building skills. (10-10)

**AUT 110C Automotive Charging System** 1 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Areas of study will involve passenger car and light truck charging system terminology, operation, and diagnosis. Skill development will be focused on diagnosis and repair of alternators and charging system circuit components. This course is also designed to improve students' communication, math, decision-making, thinking, reading, writing, ethics, and team building skills. (10-10)

**AUT 110D Automotive Wiring Diagrams** 1 Sem Hrs  
Prerequisites: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Areas of study will involve passenger car and light truck wiring diagram terminology, operation and diagnosis. Skill development will be focused on using wiring diagrams to locate circuit grounds, power, common points, and components on a vehicle. This course is also designed to improve students' communication, math, decision-making, thinking, reading, writing, ethics, and team building skills. (10-10)

**AUT 112 Engine Service** 6 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies automotive gasoline engines, terminology, operation, and diagnosis. Develops skills in controlled learning experiences on laboratory engine assemblies. (45-75)

**AUT 114 Brake System Service** 5 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies drum, disc, hydraulic, power assist, antilock terminology, operation, and diagnosis. Develops skills on drum, disc, hydraulic, power assist, and antilock brake systems. (40-60)

**AUT 114A Drum Brake Systems** 1.5 Sem Hrs  
Prerequisites: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Areas of study will involve Drum Brake System terminology, operation, and diagnosis. Skill development will be focused on: Rear Wheel Drive (RWD) Duo-Servo Brakes, Front Wheel Drive (FWD) Non-Servo Brakes, Lathe use, Wheel Cylinder Service, and service of Adjustable Wheel Bearings. This course is also designed to improve students' communication, math, decision-making, thinking, reading, writing, ethics and team building skills. (12-18)

**AUT 114B Disc Brake Systems** 1.5 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies disc brake system terminology, operation and diagnosis. Develops skills in the front and rear wheel disc brake systems and lathe use. (12-18)

**AUT 114C Hydraulic/Power Assist** 1 Sem Hr  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies hydraulic and power assisted brake terminology, operation, and diagnosis. Develops skills in the Pascal's Law, master cylinders, brake lines/hoses, electrical circuitry, valving and bleeding techniques for the hydraulics area. Skill development will also occur on vacuum, hydraulic, and electric power assisted units. (8-12)

**AUT 114D Anti-Lock Brakes** 1 Sem Hr  
Prerequisites: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies anti-lock brake terminology, operation, and diagnosis. Develops skills in car and light truck systems. A review will occur on electronics basics and use of electrical and hydraulic equipment to service these systems. (8-12)

**AUT 120 Driveline Service** 6 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies passenger car and light truck clutch, manual transmission, driveshaft, differential, transaxle, front driving axle, and transfer case terminology, operation, and diagnosis. Develops skills in diagnosis, adjustment, and repair of clutches, manual transmissions, drive shafts, differentials, transaxles, front driving axles, and transfer cases. (60-60)

**AUT 120A Clutch Service** .8 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies passenger car and light truck clutch terminology, operation, and diagnosis. Develops skills in diagnosis, adjustment and replacement of clutch system components. (8-7)

**AUT 120B Manual Transmission/Transaxle Service** 1.5 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies passenger car and light truck manual transmission/transaxle terminology, operation, and diagnosis. Develops skills in the diagnosis, disassembly, inspection, replacement of parts, and reassembly of manual transmissions and transaxles. (15-15)

**AUT 120C Rear Axle/Differential Service** 2 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies passenger car and light truck rear axle terminology, operation, and diagnosis. Develops skills in the diagnosis, disassembly, inspection, replacement of parts, set up, and reassembly of rear axles/differentials. (20-20)



**AUT 120D Front Wheel & Four Wheel Drive Service****1.7 Sem Hrs**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Areas of study will involve passenger car and light truck front driving axles and four wheel/all wheel drive terminology, operation, and diagnosis. Skill development will be focused on diagnosis, disassembly, repair procedures, and reassembly of front driving axles and transfer cases. This course is also designed to improve students communication, math, decision making, thinking, reading, writing ethics, and team building skills. (18-17)

**AUT 122 Automatic Transmission Service** **8 Sem Hrs**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies passenger car and light truck automatic transmission terminology, operation, and diagnosis. Develops skills in diagnosis, adjustment, and repair of passenger car and light truck rear wheel drive and front wheel drive automatic transmissions. (80-100)

**AUT 210 Automotive Electronics II** **3 Sem Hrs**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies body wiring diagrams, vacuum circuit diagrams, operation and location of electrical and vacuum devices. Develops skills in the diagnosis of malfunctions within accessory and convenience circuits. (30-30)

**AUT 210A Airbags/Steering Columns** **.6 Sem Hr**

Prerequisites: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies air bag and steering column terminology, operation, and diagnosis. Develops skills in the introduction to air bag systems, safety in handling, and steering column service. (6-6)

**AUT 210B Power Door Locks And Windows** **.6 Sem Hr**

Prerequisites: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies power door locks, window terminology, operation, and diagnosis. Develops skills in the wiring diagram use to service power door lock and window systems. (6-6)

**AUT 210C Instruments/Lighting** **.6 Sem Hr**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies dash instruments and exterior lighting terminology, operation, and diagnosis. Develops skills in the instrument panel circuit operation, wiring diagram application, and headlight, taillight, turn signal, and stop lamps. (6-6)

**AUT 210D Cruise Control** **.6 Sem Hr**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies cruise control terminology, operation, and diagnosis. Develops skills in the Ford, GM, Chrysler cruise control systems and wiring diagram application. (6-6)

**AUT 210E Wiper Systems** **.6 Sem Hr**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies windshield wiper system terminology, operation, and diagnosis. Develops skills in the wiring diagram application on Ford, GM, and Chrysler systems and service. (6-6)

**AUT 212 Suspension System Service** **7 Sem Hrs**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Units of instruction will emphasize nomenclature, operation diagnosis of the steering and suspension system. Skill development is established through controlled learning experiences with frame, unibody, steering, suspension, four-wheel drives and four-wheel alignment. (56-84)

**AUT 212A Frame, Linkage, and Manual Gears** **2 Sem Hrs**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies frame/unibody, linkage, manual gear terminology, operation, and diagnosis. Develops skills in the vehicle frame and unibody basics, steering linkage part servicing, recirculating ball, and rack and pinion manual steering gear service. (16-24)

**AUT 212B Suspension Systems and Alignment** **4 Sem Hrs**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies suspension systems and alignment terminology, operation, and diagnosis. Develops skills in the servicing of all component parts of current suspension systems plus two and four wheel alignment methods using the latest equipment available. (32-48)

**AUT 212C Power Gears/Electronics****1 Sem Hr**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Areas of study will involve Power Steering and suspension electronic terminology, operation, and diagnosis. Skill development will be focused on Recirculating Ball and Rack and Pinion power Steering Systems, and Electronic Level Control Systems Service. This course is also designed to improve students' communication, math, decision-making, thinking, reading, writing, ethics, and team building skills (8-12)

**AUT 214 Heating/Air Conditioning Service****5 Sem Hrs**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies passenger car and light truck heating and air conditioning terminology, operation and diagnosis. Develops skills in diagnosis and repair of the heating and air conditioning system components. (50-50)

**AUT 214A Automotive Heating and Cooling System Service****2 Sem Hrs**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies passenger and light truck heating system and engine cooling system terminology, operation, and diagnosis. Develops skills in the diagnosis and repair of heating system components and engine cooling system components. (15-15)

**AUT 214B Automotive Air Conditioning Service** **3 Sem Hrs**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies passenger car and light truck air conditioning system terminology, operation, and diagnosis. Develops skills in the diagnosis and repair of air conditioning components and use of environmentally safe equipment. (35-35)

**AUT 220 Electronic Systems Service****2 Sem Hrs**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies and reviews the fundamentals of electricity and magnetism, terminology, operation, and diagnosis. Develops skills in electronics followed by exploring the various strategies of electronic engine control. (16-24)

**AUT 222 Fuel System Service****6 Sem Hrs**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies units of instruction necessary to develop a thorough understanding of induction systems, carburetion, and injection systems. Develops skills through controlled learning experiences with fuel delivery systems, carburetion, and fuel injection systems. (58-72)

**AUT 222A Carburetor and Throttle Body Service** **1 Sem Hr**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies carburetor and throttle body fuel injection unit repair terminology, operation, and diagnosis. Develops skill in the disassembly-in-spection-component testing, reassembly and adjustments to the units. (10-10)

**AUT 222B Carburetor Fuel System Service****1 Sem Hr**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies carburetor fuel supply service terminology, operation, and diagnosis. Develops skills in all major components, their adjustments and correct operation in supplying the carburetor with fuel. (10-15)

**AUT 222C Fuel Injection Supply Service****1.5 Sem Hrs**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies fuel injection supply service terminology, operation, and diagnosis. Develops skills in all major components and their correct operation in supplying throttle body and port injection with fuel including electronic controls. (14-16)

**AUT 222D Carburetor Fuel Delivery Service****1 Sem Hr**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies carburetor fuel delivery terminology, operation, and diagnosis. Develops skills in the electronic control service, on carburetor adjustments and repair. (10-15)

**AUT 222E TBI/PFI Fuel Delivery Service****1.5 Sem Hr**

Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies throttle body and port fuel injection service, terminology, operation, and diagnosis. Develops skills in the electronic control service and repair, component service and adjustment. (14-16)



**AUT 224 Engine Performance Service** 6 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies units of instruction necessary for a thorough understanding of ignition systems, emission control systems, and driveability diagnosis. Develops skills through controlled learning experiences with ignition systems, emission control systems, and driveability diagnosis. (50-80)

**AUT 224A Ignition Principles** 1.5 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies theory of how ignition is accomplished, terminology, operation, and diagnosis. Develops skills in the distributor and distributorless ignition operation principles. (16-13)

**AUT 224B Engine Performance Test Equipment** 1.5 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies operation of common engine performance test equipment, terminology, operation, and diagnosis. Develops skills in using the oscilloscope, lab scope, 4 gas analyzer, D.M.M., vacuum gauge, scanner. (16-13)

**AUT 224C Chrysler Engine Performance Service** 1 Sem Hr  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies Chrysler product engine performance service, terminology, operation, and diagnosis. Develops skills in the ignition system, computer, fuel system, and engine performance/driveability service. (6-18)

**AUT 224D General Motors Engine Performance Service** 1 Sem Hr  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies G.M. product engine performance service, terminology, operation, and diagnosis. Develops skills in the ignition system, computer, fuel system, and engine performance/driveability service. (6-18)

**AUT 224E Ford Engine Performance Service** 1 Sem Hr  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Studies Ford product engine performance service, terminology, operation, and diagnosis. Develops skills in the ignition system, computer, fuel system, and engine performance/driveability service. (6-18)

**AUT 252 Automotive Performance Fundamentals** 5 Sem Hrs  
Prerequisite: Minimum "C" (2.0) grade in both AUT 100 and AUT 108. Teaches high performances aspects of automotive engines, engine support systems, drivetrains, suspension and safety. (47-28)

**AUT 260 Automotive Service Skills** 1 Sem Hr  
Provides skill building time through experiences gained by servicing customer vehicles at an automotive service facility. Emphasizes service department communications, safety, diagnostic methods, and repair procedures. Offers an off-campus experience, which is initiated and scheduled by the student; therefore, credit for this course can be processed through Credit by Portfolio. (0-120)

**AUT 290-299 Special Projects in Automotive Service**

## BIOLOGY COURSES

**BIO 101 Introduction to Anatomy and Physiology** 4 Sem Hrs  
An introduction to basic human anatomy and physiology taught in a lecture-demonstration format. Includes basic principles of the structures and functions of the human body and the terminology related to these topics. (60-0)

**BIO 102 Microbiology & Infection Control** 2 Sem Hrs  
Introduces the principles of infection control in the health area professions and the basic microbiological concepts as they apply to the infection control model. Includes topics such as the nature of infectious agents, reservoirs of infection, portals of entry and exit, means of transmission, and mechanisms by which disease transmission and infection can be prevented. (30-0)

**BIO 110 Environmental Science** 4 Sem Hrs  
Surveys the broad field of environmental science using local, regional, and global examples. Includes the following major topics: the scientific method, an introduction to chemistry, ecological principles, types of pollutants, energy principles, population issues, the environmental impact of human choices, and the role of economics, risk perception, and political choices in environmental decision-making. Exposes students to a variety of field, survey, and laboratory techniques useful in assessing environmental quality. (45-45)

**BIO 111 Principles of Biology** 4 Sem Hrs  
Introduces the fundamental concepts underlying biology, includes basic chemistry of the cell, cell structure and metabolism, molecular biology, genetics, the origin and evolution of living things, and ecological principles. Uses the role of biology in the present world as a unifying theme for the course. Not appropriate for biology majors; applicable as science lecture and laboratory credit for non-majors. (45-45)

**BIO 113 Trees and Shrubs of Michigan** 1 Sem Hr  
Identification of the Michigan trees and shrubs indigenous to the Saginaw Valley. Methods used in this field course include use of the leaf, bark, twig, flower and silhouette. Historical and practical information presented as appropriate. (15-0)

**BIO 114 Animal Behavior - The Wolf** 1 Sem Hr  
Designed to provide student with introduction to study of animal behavior with focus on the wolf. Topics covered will include development of behavior patterns, social behavior, effects of imprinting, role of pheromones in sexual behavior, and hunting behavior. Student will prepare ethogram comparing different subspecies and various breeds of dogs. A weekend field trip is required with student paying own expenses. (15-0)

**BIO 116 Winter Ecology** 1 Sem Hr  
Explores the adaptations and coping behaviors of organisms and communities to the additional stresses placed on them by winter. Includes such major topics as: weather and climate, hibernation, freezing avoidance, community changes, and behavior of animals. Includes identification of plants, animal tracks, insect galls, birds nests, and various kinds of snow conditions. Requires a weekend field trip. Student must pay own expenses. (30-0)

**BIO 117 Birds of Michigan** 1 Sem Hr  
Identification of resident and migratory birds by sight and song. Includes bird nesting, feeding and territorial behavior. Taught primarily in the field. (15-0)

**BIO 118 Michigan Wildflowers** 1 Sem Hr  
Identification of common seasonal wildflowers of the open field and deciduous woods. Includes ecological significance of major families of flowers. Historical and practical information presented when appropriate. Taught primarily in the field. (15-0)

**BIO 119 Stream Ecology** 1 Sem Hr  
Includes the physical environmental factors that affect organisms inhabiting streams as well as the human influence. Emphasizes the energy flow through stream ecosystems along with the lifecycles and interdependencies of stream animals. Includes fieldwork on at least four different kinds of streams. Includes a weekend field trip with the student paying own expenses. Credit may be earned BIO 119 or BIO 219 but not in both. (15-0)

**BIO 123 Survey of Michigan Plant Communities** 2 Sem Hr  
Discusses the influence of physical factors on the varieties of plant communities. Uses the interdependency of organisms as an underlying theme. Examines effects of humans on the nature of plant communities. Emphasizes fieldwork and use of field keys and reference materials for plant identification. Taught primarily in the field. Requires a weekend field trip. (30-0)

**BIO 126 Ecology and Natural History of Isle Royale National Park** 1 Sem Hr  
Introduces a remote area of ecosystems. Discusses key native and introduced species of plants and animals. Emphasizes the uniqueness, yet interdependency of organisms. Highlights the long-studied island Wolf-Moose interaction. Requires a three-day trip to the Island at student expense. (15-0)



**BIO 130 Introduction Chemistry and Cell Biology 3 Sem Hrs**

Introduces the principles and concepts of chemistry and cell biology for students entering allied health curricula. Includes basic math for science, the laws of thermodynamics, theory of atomic structure, chemical bonding, acids, bases, and buffers; introduction to organic chemistry, cell structure and function, basic metabolic pathways, mitosis, meiosis, classical and physiological genetics. Recommended as a preparatory class for BIO 140 and BIO 152 for students with limited background in cell biology and/or chemistry. (30-30)

**BIO 131 Anatomy and Physiology I 4 Sem Hrs**

Prerequisites: BIO 130 with a "C" (2.0) minimum grade or successful completion of BIO 130 competency exam or compliance with approved secondary alignment agreement. Prepares students for various health care professions as first course in a two-semester sequence. Gives major consideration to anatomy and physiology of tissues, sensory organs, blood and skin, and to muscular, skeletal, nervous and endocrine systems. Includes identification of tissues, bone, muscles, and nerves through the use of dissection and preserved materials. Includes physiology experiments related to muscle, nerve, sense organs, circulatory and endocrine functions. Due to the rapid change of information in the area of human physiology, credits earned in this course may only be acceptable to specified Delta College health curricula for a certain period of time. Consult curricula guidesheets for exact information. (45-45)

**BIO 132 Anatomy and Physiology II 4 Sem Hrs**

Prerequisite: BIO 131 with a "C" (2.0) minimum grade. Topics covered include: cardiovascular, lymphatic, respiratory, digestive, reproductive and urinary systems; nutrition, metabolism, embryology, fluids and electrolytes. Laboratory activities include: anatomical studies of these systems using preserved materials and models, as well as physiology experiments relating to metabolic rates, control of breathing, digestive enzymes & kidney physiology. Endocrine influence on these systems is discussed. Due to the rapid change in information in the area of human physiology, credits earned in this course may only be acceptable to specified Delta College health curricula for a certain period of time. Consult curricula guidesheets for exact information. (45-45)

**BIO 140 Essentials of Human Anatomy & Physiology 5 Sem Hrs**

Introduces the basic principles and concepts of chemistry, biochemistry and cell biology, as well as human anatomy and physiology for students entering certain allied health curricula. Includes structures and functions of the human body and related terminology. (75-45)

**BIO 152 Human Anatomy & Physiology I 4 Sem Hrs**

Prepares you for various allied health and nursing professions as first course of two semester sequence. Provides an introduction to the basic principles of chemistry and biochemistry as they relate to human physiology. Gives major consideration to the anatomy and physiology of cells and tissues and the following systems: skeletal, muscle, nervous, and endocrine. Includes the study of the innate and adaptive mechanisms of the body's disease fighting system. (45-45)

**BIO 153 Human Anatomy & Physiology II 4 Sem Hrs**

Prerequisite: BIO 152 with a "C" (2.0) minimum grade. Investigates the anatomy and physiology of the following systems: cardiovascular, respiratory, digestive, urinary, and reproductive. Includes lymph vessels, hematology, human developmental biology, fluids and electrolytes, nutrition and metabolism. Incorporates endocrinology as various hormones affect the systems being studied. (45-45)

**BIO 160 Human Anatomy & Physiology Review 4 Sem Hrs**

Prerequisites: Minimum grade of "C" in both BIO 131 and BIO 132 or successfully pass challenge exams for BIO 131 and BIO 132. Provides comprehensive review and update of contents of BIO 131 and BIO 132 using cooperative learning found in Health Care Team concept. Focuses on developing and strengthening abilities in critical thinking, problem solving, and student directed learning while establishing mastery of material. (45-45)

**BIO 171 Integrated General Biology I 4 Sem Hrs**

Prerequisite: Successful completion with "C" (2.0) minimum grade of CHM 111 or CHM 101 or BIO 130 or approval by instructor. Biology 171 is one of two introductory courses for biology majors and related fields. Together, BIO 171 and BIO 172 constitute a complete introduction to college level biology. These courses may be taken in any order regardless of the course numbers. Includes the scientific method, diversity of life with emphasis on biochemistry, cell structure and function, bioenergetics and metabolism, molecular, Mendelian and developmental genetics. (45-45)

**BIO 172 Integrated General Biology II 4 Sem Hrs**

Prerequisite: Successful completion, with a minimum grade of "C" (2.0), of both high school chemistry and high school biology or CHM 101 and BIO 111. BIO 172 is one of two introductory courses for biology majors and related fields. Together, BIO 171 and BIO 172 constitute a complete introduction to college level biology. These courses may be taken in any order regardless of the course numbers. Includes a survey of the five kingdoms with emphasis on comparative anatomy, development and ecological roles, evolutionary patterns, population genetics, embryology behavior and ecology. (45-45)

**BIO199/199H Human Heredity and Sexuality 4 Sem Hrs**

Prerequisite: High school Biology and Chemistry. Introduces the fundamental concepts underlying biology with a focus on heredity and sexuality. Includes cell biology, inborn errors of metabolism, reproduction and development, immunology and HIV/ AIDS, oncogenes and cancer, plus classical, population and molecular genetics. Explores the frontiers of health and medicine including reproductive technologies, biotechnology, gene therapy, prenatal diagnosis, genetic screening and the bioethics of the Human Genome Project. Includes case study analysis and laboratory investigations related to cellular and population genetics and biotechnology. (45-45)

**BIO 203 General Microbiology 4 Sem Hrs**

Prerequisites: BIO 130 or BIO 171 or BIO 140 or BIO 152, each requiring a "C" (2.0) minimum grade or successful completion of BIO 130 competency exam or permission of instructor. Surveys the microorganisms associated with infectious diseases, including the bacteria, viruses, fungi, and protozoans. Emphasizes the health care aspects, and the distribution and activities of microbes as related to the following: microbial nutrition and anatomy, growth, disease, epidemiology, infection and immunity. Uses labs that stress aseptic techniques and that develop skills necessary to handle microbes in health care settings, including the characterization of unknown microbes. (45-60)

**BIO 219 Stream Ecology: Aquatic Macroinvertebrate Research 2 Sem Hrs**

Introduces the physical environmental factors that affect organism inhabiting streams as well as human influences on streams. Emphasizes the energy flow through stream ecosystems along with the lifecycles and interdependencies of stream animals. Includes fieldwork on at least four different kinds of streams. Emphasizes interrelationships of macroinvertebrate communities within specific stream ecosystems. Includes a weekend field trip with the student paying own expenses. Credit may be earned in BIO 119 or BIO 219 but not in both. (30-0)

**BIO 221 Nature Study 4 Sem Hrs**

Prerequisite: BIO 111 recommended. Designed to introduce students to identification of local flora and fauna. Investigates relationships of these organisms to student's environment. (45-30)

**BIO 230 Physical Anthropology and Archeology 4 Sem Hrs**

An introduction to the origin and evolution of humankind's physical and cultural development. Major emphases are on the evidence and theories of human evolution and a survey of Old World and New World Archeology. Credit may be earned in BIO 230 or SOC 230 but not in both. (60-0)



**BIO 240 Human Anatomy** 4 Sem Hrs  
Prerequisite: BIO 171 or permission of instructor. The anatomy of the human body is presented on an integrated regional basis, supplemented by relevant histological, embryological, and functional considerations. The laboratory emphasizes regional dissections of the cat. Designed to meet the needs of biology majors and pre-professional science curricula, including all transfer health-related fields. (45-45)

**BIO 241 Physiology** 4 Sem Hrs  
Prerequisite: BIO 171 or permission of instructor. Background in anatomy and chemistry is desirable, but not required. The aim of the course is to provide students with an introduction to the functional integration of the major organ systems of animals, with special emphasis on the human body. Emphasis is placed on the ways in which the various systems interact to maintain homeostasis of the individual. The laboratory experiments illustrate classical as well as modern approaches to the physiology of various organ systems. (45-60)

**BIO 250 Human Kinesiology** 4 Sem Hrs  
Prerequisites: BIO 140 or BIO 152 or permission of instructor. Discusses theories relating to anatomical and mechanical principles of human movement with applications to physical therapy, physical education, sports medicine and occupational therapy. Studies attachments, actions and innervations of the most used skeletal muscles. Focuses on administration of participation in various tests, measurements and evaluation of the anatomical and mechanical aspects of both simple and complex physical performance. (45-45)

**BIO 251 Exercise Physiology** 4 Sem Hrs  
Prerequisites: BIO 152, BIO 153, and LW 220. Emphasizes the physiological responses of the human body to acute and chronic bouts of exercise. Presents the study of health/fitness appraisal, exercise prescription, quantifying the energy cost of work (physical activity), identifying physiological and psychological responses to exercise, and the administration of exercise programs to diverse populations. Credit may be earned in LWT 251 or BIO 251 but not both. (60-0)

**BIO 268 International Studies in Biology** 1-4 Sem Hrs  
A biologic interpretation of selected world regions with emphasis on natural history, fauna and flora, and ecological relationships. Includes class lectures, individual consultation, and international field study. Expenses for the field study must be borne by the student. (60-0)

**BIO 274 Introduction to Biotechnology** 2 Sem Hrs  
Prerequisite: CHM 111 and BIO 171 or permission of instructor. Gives a detailed look at cell and molecular biology with a focus on biotechnology. Explores the following topics: regulation of gene expression and development, recombinant DNA, gene cloning, PCR, DNA sequencing and profiling, gene therapy, protein purification, cell culture, cancer and the use of model organisms. Designed for students interested in careers in biotechnology, biochemistry, medicine or pharmacy. Meets requirements of Ferris State University's Bachelor of Science program in biotechnology. (30-0)

#### **BIO 290-299 Special Projects in Biology**

### **BROADCASTING AND TELECOMMUNICATIONS COURSES**

**BRT 140 Electronic Media History** 3 Sem Hrs  
Concentrates primarily on Broadcasting History, its roots and parentage. Relationships will be drawn between both past issues and personalities, and those of today. Answers the question: Where do we come from and where are we going as a profession? (45-0)

**BRT 151 Media Production I** 4 Sem Hrs  
Introduces basic media production methods and equipment, including hardware and software. Emphasizes developing comprehension of communication using visual and aural mediums, and the variety of media types and formats available. Acquires the basic production skills necessary for developing media projects. Uses Television and Radio Labs to instruct students in basic elements of video and audio acquisition. (60-30)

**BRT 153 Broadcast Performance** 3 Sem Hrs  
Introduction to broadcast performance. Emphasis is on presentations before microphones and cameras. Dress, movement, make-up, lighting, and delivery are all examined in such major performance situations as interviews, discussions, newscasts, commercials, and production demonstrations. (30-30)

**BRT 155 Media Production II** 4 Sem Hrs  
Prerequisites: BRT 151; PHO 100 or ART 115; CST 103, CST 106, CST 110. Builds on the body of knowledge gained in BRT 151. Expands the student's knowledge and skill in editing, composition of images and media, and integration of that media into finished productions. Uses both studio and editing facilities, students will continue to refine both their audio and video production skills as they learn to develop and execute productions. Uses Television, Radio, and Computer labs. (45-45)

**BRT 211 Writing for Broadcast & New Media** 3 Sem Hrs  
Prerequisite: ENG 111, ENG 111A, ENG 111H or OAT 151 AND OAT 152. Introduces and familiarizes the specialized writing styles in radio, TV, cable, new media and corporate/non-profit production. Includes, but is not limited to, news, promotional announcements, sports and advertisements. Emphasizes and analyzes various writing styles employed in the commercial, non-profit and corporate world and demonstrates that style through frequent writing. Produces a writing portfolio at the end of the term, which can be used for jobs search. (45-0)

**BRT 227 Broadcast Sales** 3 Sem Hrs  
Basic marketing concepts in broadcast time and spot sales. Information on the psychological, sociological, economic, and communicative aspects of salesmanship are applied to the broadcast industry. Actual sales presentations are prepared for hypothetical clients. Practicing professionals in the broadcast sales field share their experiences with the class. (45-0)

**BRT 233 Radio News and Programming** 3 Sem Hrs  
Prerequisites: BRT 151 and ENG 116. Introduces basic elements of Broadcast Radio News producing, reporting, and resources; develops student's understanding of Radio programming, formats, and differences between commercial and public radio. Produces news and programming projects utilizing analog and digital equipment. (30-30)

**BRT 253 Advanced Broadcast Performance** 3 Sem Hrs  
Prerequisite: BRT 153. Provides advanced experience in performance situations within the field of electronic media. (30-30)

**BRT 255 Media Production III** 4 Sem Hrs  
Prerequisites: BRT 155, ART 271. Refines and utilizes skills and knowledge gained in Media Production I & II with further instruction to produce and direct finished multi-media productions. Emphasizes producing and directing skills and the use of multi-media to maximize effectiveness. Produces and directs multi-media productions, including audio and video components, with specific outcomes for specific uses and audiences. (60-30)

**BRT 260A Broadcast Practicum** 2 Sem Hrs  
Prerequisite: BRT 151 or permission of instructor. Provides practical real-life broadcast experience. Gives opportunities to actually produce an authentic on-air broadcast program as part of a weekly televised series. Provides tapes of performances, which may be used for auditions. Credit may be earned in BRT 260 or BRT 260A but not in both. Offered Fall semester. (0-30)

**BRT 260B Broadcast Practicum** 2 Sem Hrs  
Prerequisite: BRT 151 or permission of instructor. Provides practical real-life broadcast experience. Gives opportunities to actually produce an authentic on-air broadcast program as part of a weekly televised series. Provides tapes of performances, which may be used for auditions. Credit may be earned in BRT 261 or BRT 260B but not in both. Offered winter semester. (0-30)

**BRT 281 Internship** 1 Sem Hr  
Prerequisite: BRT 149 or BRT 156 with "C" (2.0) minimum grade and instructor approval. Provides hands-on production training in multiple areas of TV or Radio studio. Requires 5 hours per week under direct supervision of production staff member. (0-75)



**BRT 282 Internship 2 Sem Hrs**  
Prerequisite: BRT 149 or BRT 156 with "C" (2.0) minimum grade and instructor approval. Provides hands-on production training in multiple areas of TV or Radio studio. Requires 10 hours per week under direct supervision of production staff member. (0-150)

**BRT 283 Internship 3 Sem Hrs**  
Prerequisite: BRT 149 or BRT 156 with "C" (2.0) minimum grade and instructor approval. Provides hands-on production training in multiple areas of TV or Radio studio. Requires 15 hours per week under direct supervision of production staff member. (0-225)

**BRT 290-299 Special Projects in Broadcasting or Telecommunications**

## COMPUTER AIDED DRAFTING COURSES

**CAD 114 AutoCAD Introduction 2 Sem Hrs**  
Uses AutoCAD software to draft two dimensional multi-view drawings and three dimensional wire frame constructions. Completes projects including arrays, blocks, assigned properties, notations, and dimensions. Acquires knowledge of the software, hardware and the MS-DOS operating system in the process of developing a Computer Aided Design and Drafting drawing for multi-pen plotting. Credit may be earned in either CAD 114 or SKCA 114 but not in both. (30-0)

**CAD 214 AutoCAD Techniques 2 Sem Hrs**  
Prerequisite: CAD 114 and either DRF 104 or DRF 105. Extends skills in the use of AutoCAD and builds efficiency in the production of CAD drawings. Developing two-dimensional multi-view drawings fully noted, sectioned, and dimensioned is emphasized. Adding attributes and composing complete working drawings also covered. Students complete three-dimensional drawings to prove and verify designs and display them as expanded multi-views. (30-0)

**CAD 224 AutoCAD Advanced 2 Sem Hrs**  
Prerequisite: CAD 214. Develops skills in the use of AutoCAD and increases the options and methods of production of CAD drawings. Develops capability with AutoCAD system variables, dimensioning variables, customizing screen & tablet menus, symbol libraries and script files. Included is an introduction to AutoLISP, extended file manipulation and command of DOS. Both 2D multi-view and 3D wireframe drawings are assembled into working drawings. (30-0)

**CAD 226 AutoCAD 3D Advantage 2 Sem Hrs**  
Prerequisite: CAD 214 or equivalent AutoCAD experience. Develops skills in the use of 3D AutoCAD and increases the options and methods of production of 3D AutoCAD drawings. Develops capability with 3D AutoCAD Wireframe, Surfaces and Solids, Model Space and Paper Space. Also includes extended experience with System Variables, file manipulation and command of DOS. (30-0)

**CAD 290-299 Special Projects in Computer Aided Drafting**

## CHILD DEVELOPMENT COURSES

**CD 110 Infant/Toddler Development 3 Sem Hrs**  
Introduces the student to the skills needed to interact with infants and toddlers as a teacher in professional capacity. Identifies curriculum methods used to enhance growth in all developmental areas, and skills required to work with parents to foster basic early learning enhancement. (45-0)

**CD 111 Introduction to Early Childhood Education 3 Sem Hrs**  
CD 111 must be taken as prerequisite to, or concurrently with, CD 115P. Introduces the field of early childhood education for ages birth-8. Provides an overall view of classroom goals, types of programs, teaching techniques and professionalism. Defines Michigan licensing laws for programs. A student must earn a grade of "C" (2.0) or better in this course to obtain an advanced certificate in Child Development, or an Associate Degree in Applied Arts in Child Development. (45-0)

**CD 112 Learning Center Activities 3 Sem Hrs**  
CD 112 must be taken as prerequisite to, or concurrently with, CD 115P. Provides the basic curriculum and organizational skills needed to work in an early childhood program. Identifies, develops and presents developmentally appropriate activities for the early childhood classroom. A student must earn a grade of "C" (2.0) or better in this course to obtain an advanced certificate in Child Development, or an Associate Degree in Applied Arts in Child Development. (45-0)

**CD 113 Child Guidance Strategies 3 Sem Hrs**  
Recommended enrollment in CD 111, 112, 113 and 115P concurrently. Introduces basic skills needed to interact with young children in a positive manner. Identifies instances of growth-producing and/or growth-restricting child behavior and the capability to recognize and interpret a variety of guidance techniques are the major objective of the course. You must earn a grade of "C" (2.0) or better in this course to obtain a certificate in Child Development or Teacher Assistant or an Associate Degree in Applied Science in Child Development or Child Development/Teacher Assistant Option. (45-0)

**CD 114 Theories of Child Development 3 Sem Hrs**  
Introduces human growth and development from birth through adolescence. Emphasizes observation techniques and theories of human development. You must earn a grade of "C" (2.0) or better in this course to obtain a certificate in Child Development or Teacher Assistant or an Associate Degree in Applied Science in Child Development or Child Development/Teacher Assistant Option. (45-0)

**CD 115P Introductory Community Practicum 3 Sem Hrs**  
CD 111, 112, and 113 must be taken as prerequisite to or concurrently with CD 115P. Introduces the early childhood classroom, observing and participating with young children and their teachers. Requires approximately nine hours a week volunteering in a quality early childhood program during the main teaching portion of the day for a total of 90 hours. A student must earn a grade of "C" (2.0) or better in this course to obtain an advance certificate in Child Development, or an Associate Degree in Applied Arts in Child development. Credit may be earned in CD 160 or CD 115P but not in both. (22.5-90)

**CD 115S Introductory Specialized Practicum 2 Sem Hrs**  
CD 110 and CD 113 must be taken as prerequisites to, or concurrently with, CD 115S. Introduces the infant-toddler and school-age classroom, observing and participating with these specialized populations and their teachers. Requires approximately five hours a week volunteering in a quality, public, child development program during the main portion of the day. Requires 30 hours with each age group, for a total of 60 hours. A student must earn a grade of "C" (2.0) or better in this course to obtain an advanced certificate in Child Development, or an Associate Degree in Applied Arts in Child Development. (15-60)

**CD 116 Diversity In Early Childhood Education 3 Sem Hrs**  
CD 116 must be taken as a prerequisite to, or as a concurrent course with CD 117. Introduces the background needed to work with parents of children in early childhood programs. Explores diversity in social class, economic resources, cultural customs, and traditions. A student must earn a grade of "C" (2.0) or better in this course to obtain an advanced certificate in Child Development, or an Associate Degree in Applied Arts in Child Development. (45-0)

**CD 117 Student Teaching Practicum 6 Sem Hrs**  
CD 110, 111, 112, 113, 114, 115P and 115S must be taken with a minimum "C" grade. CD 116 and PSY 223 may be taken as prerequisites or concurrently. Coordinator's approval required prior to enrollment. Focuses on teaching developmentally appropriate activities while volunteering in an approved preschool or kindergarten classroom. Application of developmentally appropriate practice and theory during 12 hours per week in an approved student teaching classroom, for a total of 150 contact hours. A student must earn a grade of "C" (2) or better in this course to obtain an advanced certificate in Child Development, or an Associate Degree in Applied Arts in Child Development. (37.5-150)



**CD 210 Child Development Program Management 4 Sem Hrs**

Instructor permission required upon proof that all prerequisites have been met successfully, including being granted an Advanced Certification in Child Development from Delta College. Provides the student with the capstone course for obtaining an Associate of Arts Degree in Child Development. Details all facets of program management in a licensed facility. Introduces the student to developing techniques used in writing a parent program handbook, as well as a staff manual of policies and procedures. A student must earn a grade of "C" (2) or better in this course to obtain an Associate Degree in Applied Arts in Child Development. Credit may be earned in either CD 210 or CD 200 but not in both. (45-0)

**CD 290-299 Special Projects in Child Development****COOPERATIVE EDUCATION COURSES**

Student must carry a minimum of 12 credit hours including the co-op class, maintain a minimum 2.0 grade point average, and work 15-25 hours per week on a job relating to his/her program. Co-op coordinator must approve the co-op workstation.

Students are advised to consult with co-op coordinator about appropriate course number as course numbers depend upon program.

**CED 103, 113, 123, 133, 143, 153, 163, 173, 183, 193A, 193B, 193C Cooperative Education 1 Sem Hr**

Prerequisite: Employed in a major-related position and have consent of co-op coordinator. Evaluates the student in a program-related, supervised workstation for the on-the-job experience. Evaluations are made by the employer/supervisor and the college coordinator. Class may meet with coordinator five hours per semester. Term paper and/or project reports required. Designed for student who is placed in co-op position during the last 1/3 of the semester. (5-75)

**CED 104, 114, 124, 134, 144, 154, 164, 174, 184, 194A, 194B, 194C Cooperative Education 2 Sem Hrs**

Prerequisite: Employed in a major-related position and have consent of co-op coordinator. Evaluates the student in a program-related, supervised workstation for the on-the-job experience. Evaluations are made by the employer/supervisor and the college coordinator. Class will meet with coordinator ten hours per semester. Term paper and/or project reports required. Designed for student who is placed in co-op position during the last 2/3 of the semester. (10-150)

**CED 105, 115, 125, 135, 145, 155, 165, 175, 185, 195A, 195B, 195C Cooperative Education I 3 Sem Hrs**

Prerequisite: Student must apply for credit in CED 105, 115, 125, 135, 145, 155, 165, 175, 185, 195A, 195B, or 195C in the semester prior to earning credit or currently be employed in a major-related position. Evaluates the student in a program-related, supervised workstation for the on-the-job experience. Evaluations are made by the employer/supervisor and the college coordinator. Class will meet with coordinator two hours per week. Term paper and/or project reports are required. (15-225)

**CED 106, 116, 126, 136, 146, 156, 166, 176, 186, 196A, 196B, 196C Cooperative Education II 3 Sem Hrs**

Prerequisite: CED 105, CED 115, 125, 135, 145, 155, 165, 175, or 185, 195A, 195B, or 195C. Continues from Cooperative Education I with additional responsibilities at the worksite. Evaluations are made by the employer/supervisor and the college coordinator. Class will meet with coordinator two hours per week. Term paper and/or project reports are required. (15-225)

**CED 120 Co-Op Retail Management 3 Sem Hrs**

Prerequisite: Employable skill and consent of coordinator. Places the student in a program-related, supervised work station for on-the-job experience. Evaluations are made by the employer/supervisor and the college coordinator. Class may meet with coordinator two hours per week. Term paper and/or project reports may be required. (15-225)

**CED 122 Co-op Fashion/Interior Design 3 Sem Hrs**

Prerequisite: Employable skill and consent of coordinator. Places the student in a curriculum-related, supervised work station for on-the-job experience. Evaluations are made by the employer/supervisor and the college coordinator. Term paper and/or project reports may be required. (15-225)

**CED 205, 215, 225, 235, 245, 255, 265, 275, 285, 295A, 295B, 295C Cooperative Education III 2 Sem Hrs**

Prerequisite: CED 106, 116, 126, 136, 146, 156, 166, 176, or 186, 196A, 196B, or 196C. Continues from Cooperative Education I and II with additional responsibilities at the worksite. Evaluations are made by the employer/supervisor and the college coordinator. Class is a five-hour professional development seminar. (5-225)

**CED 206, 216, 226, 236, 246, 256, 266, 276, 286, 296A, 296B, 296C Cooperative Education IV 2 Sem Hrs**

Prerequisite: CED 205, 215, 225, 235, 245, 255, 265, 275, 285, 295A, 295B, or 295C. Continues from Cooperative Education I, II, and III with additional responsibilities at the worksite. Evaluations are made by the employer/supervisor and the college coordinator. Class is a five-hour professional development seminar. (5-225)

**CED 207, 217, 227, 237, 247, 257, 267, 277, 287, 297A, 297B, 297C Cooperative Education V 1 Sem Hr**

Prerequisite: CED 206, 216, 226, 236, 246, 256, 266, 276, 286, 296A, 296B, or 296C. Continues from Cooperative Education I, II, III, and IV with additional responsibilities at worksite. Evaluations are made by the employer/supervisor and the college coordinator. A one-on-one consultation with co-op coordinator is required. (2.5-162.5)

**CED 208, 218, 228, 238, 248, 258, 268, 278, 288, 298A, 298B, 298C Cooperative Education VI 1 Sem Hr**

Prerequisite: CED 207, 217, 227, 237, 247, 257, 267, 277, 287, 297A, 297B, or 297C. Continues from Cooperative Education I, II, III, IV, and V with additional responsibilities at worksite. Evaluations are made by the employer/supervisor and the college coordinator. A one-on-one consultation with co-op coordinator is required. (2.5-162.5)

**CED 280A, 280B, 280C, 280D 1 Sem Hr**

Prerequisite: Student must apply for credit in the appropriate CED course (CED 280A, 280B, 280C, or 280D) in the semester prior to earning credit or currently be employed in a major-related position. Integrates, reinforces, and documents the student's academic studies with related work of at least 180 hours at an approved work site. Evaluations are made by the employer/supervisor and the college coordinator. You have the option to earn credit in CED 280A, 280B, 280C, 280D or in the CED series related to your program of study. (15-180)

**CED 290-292 Special Projects in Cooperative Education****CHEMICAL TECHNOLOGY COURSES****CT 100 Introduction to Chemical Technology 2 Sem Hrs**

Provides overview of Chemical Process Industries and Chemical Technology with focus on the role of the process operator and the chemical technician. Introduces concepts of safety, regulation, laws affecting the job and the industry, and quality control. Includes study skills and attitudes necessary for study of science/technology as well as means of continuing professional and personal growth. Credit may be earned in CT 100 or CPI 110 but not both. (30-0)

**CT 290-299 Special Projects in Chemical Technology****CHEMISTRY COURSES****CHM 101 General Chemistry I 5 Sem Hrs**

Fundamental principles, including atomic theory, periodic properties, states of matter, laws of chemistry combination, nomenclature, and chemical phenomena of interest to daily living. Designed as a preparation to CHM 111 for those students with no previous work in chemistry and to satisfy a science requirement in certain curricula. Students may use either CHM 101 or CHM 111, not both, to fulfill graduation requirements. (75-30)



**CHM 105 Technical Chemistry I****5 Sem Hrs**

Provides basic principles of general chemistry with an emphasis on resource-based and hands-on learning. Includes chemical and physical properties of matter, measurement and chemical calculations, chemical terminology, reactions and processes, and use of industrial and field testing equipment. Integrates computer skills into the course including word processing, spreadsheet, email, and web use. (60-60)

**CHM 106 Technical Chemistry II****5 Sem Hrs**

Prerequisite: Completion of CHM 105 with a grade of "C" or better. Provides inorganic and organic chemistry knowledge and technical skills foundation essential for employment as a technician in a variety of chemistry-based professions. Includes analytical instrumentation use. (60-60)

**CHM 107 Chemistry for Engineering Technology****4 Sem Hrs**

Prerequisite: MTH 119 or equivalent. Develops a foundation in chemistry for engineering technicians and designers so they can make better informed decisions. Builds connections of understanding between engineering material selection, design, and manufacturing processes. To make connections, uses fundamental principles including atomic theory, structure of metals and polymers, periodic properties, states of matter, gas laws, nomenclature, and common chemical reactions. (45-30)

**CHM 111/111H General and Inorganic Chemistry I****4 Sem Hrs**

Prerequisites: High school chemistry or CHM 101 and one year of high school algebra. A course with emphasis on an in-depth study of the theories and principles of atomic structure bonding, stoichiometry, states of matters, and properties of solutions. This course is required for students who intend to enroll for more than one year of chemistry. Meets the needs of chemistry majors. Students may use either CHM 101 or CHM 111, not both, to fulfill graduation requirements. (60-45)

**CHM 112/112H General and Inorganic Chemistry II****4 Sem Hrs**

Prerequisite: CHM 111. Continuation of CHM 111. A study of chemical equilibria in water, including ionization solubility, complexation, acid-base phenomena, and oxidation reducing equilibria. The principles of electrochemistry, chemical thermodynamics, and chemical kinetics are discussed. Special topics such as the descriptive study of metals and non-metals are also discussed in this course. Meets the needs of chemistry majors. (60-45)

**CHM 210 Organic Chemistry I****4 Sem Hrs**

Prerequisite or concurrent enrollment in CHM 112. Provides the basic principles of organic chemistry, including functional groups, nomenclature, mechanisms, reaction types and various reagents. Meets the needs of students in the medical and health fields, engineering fields, and science majors. Credit may be earned in CHM 210 or CHM 201 or CHM 211. (60-0)

**CHM 210L Organic Chemistry I Laboratory****1 Sem Hr**

Prerequisite or concurrent enrollment in CHM 112. Provides the basic principles of organic laboratory techniques. Includes note keeping, filtrations, recrystallizations, extractions, distillation methods, spectroscopic methods, chromatographic methods, chemical searches, and report writing. Recommended to be taken concurrently with CHM 210. Credit may be earned in CHM 210L or CHM 201L or CHM 211L. (0-60)

**CHM 220 Organic Chemistry II****4 Sem Hrs**

Prerequisite: CHM 210 or CHM 201 or CHM 211. Provides a continuation of CHM 210 with reactions, mechanisms and nomenclature of carbonyl groups, carbohydrates, lipids, proteins and nucleotides. Includes special topics with applications in the medical, pharmaceutical and industrial fields. Meets the needs of students in medical and health fields, engineering fields, and science majors. Credit may be earned in CHM 220 or 202 or 212. (60-0)

**CHM 220L Organic Chemistry II Laboratory****1 Sem Hr**

Prerequisites: CHM 210 and CHM 210L or CHM 201 and CHM 201L or CHM 211 and CHM 211L. Provides a continuation of CHM 210L, applying the basic principles of synthesis and analysis to various challenging reactions, using established techniques. Recommended to be taken concurrently with CHM 220. Credit may be earned in CHM 220L or CHM 202L or CHM 212L (0-60)

**CHM 221 Organic Biochemistry****3 Sem Hrs**

Prerequisite: CHM 111, or CHM 101 with a minimum grade of B (3.0). Includes the structure and properties of the major classes of organic compounds, with emphasis on characteristic reactions of various functional groups, as well as fundamental concepts of bio-chemistry and the interrelationships of biologically active compounds with major metabolic pathways. (45-0)

**CHM 222 Organic Biochemistry Laboratory****1 Sem Hr**

Prerequisite: CHM 221 or concurrent enrollment. Laboratory experiments are designed to provide a variety of perspectives to supplement and enhance the student's background in organic and biochemistry. Experiments include extractions, syntheses, separations, analyses, comparison of reactions, and metabolic studies. (0-45)

**CHM 230 Chemical Analysis/Instrumentation****4 Sem Hrs**

Prerequisite: CHM 106 or CHM 112. Presents the theory and practice of basic chemical preparation and analysis as performed in research and/or industrial settings. Emphasizes safety, detailed and accurate record keeping, data handling, and report writing. Beneficial to all science majors in Biology, Chemistry, Engineering, and other Applied Science Curricula. (45-45)

**CHM 231 Troubleshooting for Analytical Instrumentation****1 Sem Hr**

Prerequisite: CHM 201, CHM 211, CHM 221, or CHM 230 (may be taken concurrently). Provides an overview of techniques and documentation required for trouble shooting analytical instrumentation in an industrial setting. Includes systematic approach to diagnosis of instrument failures as well as hands-on maintenance and repair operations. Beneficial to all science and technology majors. (15-0)

**CHM 290-299 Special Projects in Chemistry****CRIMINAL JUSTICE COURSES****CJ 101 Police Recruit Training****6 Sem Hrs**

Prerequisite: Must be currently employed full-or part-time by a law enforcement agency, or have completed an Associate Degree upon entry, or will receive an Associate Degree upon completion of the Basic Police Training Academy. OSE 153, LWT 175, and LW 280 must be taken concurrently. Provides the basic training necessary to assume the duties of a police officer in preparation for MLEOTC (Michigan Law Enforcement Officers Training Council) state certification. Includes constitutional law, criminal law, laws of arrest, search and seizure, investigative techniques, first aid, firearms, motor vehicle laws, defensive tactics, and patrol techniques. Contact the Criminal Justice Training Center for information concerning admission requirements, enrollment, and current course fees. To obtain an Associate Degree in Criminal Justice, a student must earn a grade of "C" (2.0) or better in this course. (470-0)

**CJ 110 Introduction to Criminal Justice****3 Sem Hrs**

Introduction and career orientation to the field of law enforcement and criminal justice. Explores major areas including: the philosophical and historical background of the field; types of courts and agencies in the field and their responsibilities; administrative and technical problems in the field and an understanding of the Bill of Rights Amendments to the Constitution. A student must earn a grade of "C" (2.0) or better in this course to obtain an Associate Degree in Criminal Justice. (45-0)

**CJ 111 Police Administration****3 Sem Hrs**

Analyzes the functional divisions of the modern police department. Studies management operations, coordination of activities, communications, recruiting, training, public relations, and looks at the future of law enforcement. A student must earn a grade of "C" (2.0) or better in this course to obtain an Associate Degree in Criminal Justice. (45-0)

**CJ 112 Police Operations****3 Sem Hrs**

Study of patrol as a basic police function, including both the theoretical and functional aspects. Responsibilities of, purpose, methods, types and means of police patrol. Examination of patrol strength layout, beats, technological advancements affecting the patrol officer. A student must earn a grade of "C" (2.0) or better in this course to obtain an Associate Degree in Criminal Justice. (45-0)



**CJ 130 Introduction to Corrections 3 Sem Hrs**  
Provides an understanding of the agencies and institutions that have legal authority over the custody and supervision of offenders. Discusses major areas including the history and development of corrections, community based corrections, local, state and federal institutions, and institutional administration. Explores correctional treatment of female, male, and juvenile offenders. Covers the role of corrections in the total system of criminal justice. One of five courses that will meet the state requirement of 15 credit hours for employment as a correctional officer. Credit may be earned in either CJ 130 or CJ 230, but not in both. (45-0)

**CJ 132 Client Relations in Corrections 3 Sem Hrs**  
Designed to create an awareness of the effects of culture and discrimination on the attitude formation of individuals, and assist in identifying various professional responses to human behavior. One of five courses that will meet the state requirement of 15 credit hours for employment as a corrections officer. Must earn a grade of "C" (2.0) or better in this course to meet this state requirement. Credit may be earned in either CJ 132 or CJ 232, but not both. (45-0)

**CJ 135 Correctional Institutions and Facilities 3 Sem Hrs**  
Designed to present an overview of correctional institutions and facilities. Covers topics including the purpose of prisons and correctional institutions, treatment and rehabilitating programs, management and organization of correctional institutions, custodial care, safety and security, and future concerns. One of five courses that will meet the state requirement of 15 credit hours for employment as a correctional officer. Student must earn a grade of "C" (2.0) or better in this course to meet this state requirement. Credit may be earned in either CJ 135 or CJ 235, but not both. (45-0)

**CJ 182 Introduction to Security 3 Sem Hrs**  
An introduction and career orientation to the field of security. The major areas explored include: origins and development of security, proprietary security, risk analysis, fire protection, safety, internal theft control, insurance cargo security, computer security, institutional security, and the future of security. (45-0)

**CJ 187 Current Issues in Security 3 Sem Hrs**  
A survey of current issues in security. Topics covered include: Terrorism, espionage, substance abuse, employee theft, computer vulnerabilities, and protection of information. (45-0)

**CJ 210 Introduction to Criminal Investigation 3 Sem Hrs**  
Prerequisite: CJ 110. Introduces criminal investigation procedures; includes theory of an investigation, conduct at crime scenes, collection and preservation of physical evidence; methods used in police science laboratory; finger prints, ballistics, documents, serology, photography, and related forensic sciences. A student must earn a grade of "C" (2.0) or better in this course to obtain an Associate Degree in Criminal Justice. (45-0)

**CJ 220 Crime Laboratory Techniques 3 Sem Hrs**  
Prerequisite: CJ 110. CJ 210 must be taken concurrently or prior to. Introduces scientific criminal investigation and criminalistics; includes the proper handling and transmittal of evidence to the crime laboratory, laboratory aids that are available, understanding of the probabilities related to examination of physical evidence. A student must earn a grade of "C" (2.0) or better in this course to obtain an Associate Degree in Criminal Justice. (45-30)

**CJ 233 Client Growth and Development 3 Sem Hrs**  
Designed to enable students to differentiate the various factors that are involved in the development and growth of the criminal. Included will be a discussion of the biological, environmental, and psychological influences. Specific problems such as sexual, substance abuse and medical disorders will be reviewed. Intervention strategies will also be discussed. One of five courses which will meet the state requirement of 15 credit hours for employment as a corrections officer. Student must earn a grade of "C" (2.0) or better in this course to meet this state requirement. (45-0)

**CJ 236 Community Based Corrections 3 Sem Hrs**  
An examination of alternative correctional programs commonly referred to as Community Based Corrections. Major topics covered include: the development, history and Michigan laws governing community based corrections, diversion programs, pretrial release, probation, restitution and community service, temporary release, halfway houses, parole, female programs, and sex and drug offender programs. (45-0)

**CJ 237 Jails & Local Detention 3 Sem Hrs**  
Explains the operations of jails and local detention facilities and their unique role in the criminal justice system. Emphasizes Michigan jail and lockup operations, as well as their organization, management, and emerging issues confronting American jails. Covers differences in jail and prisons regarding operations and differing clientele. (45-0)

**CJ 238 Legal Issues in Corrections 3 Sem Hrs**  
A study of the primary legal issues correctional personnel will be entrusted to enforce and safeguard. Topics covered include an overview of U.S. Constitutional law, the court process from arrest through trial, the structure and function of the S.S. and state courts, and prisoner rights. One of five courses which will meet the state requirement of 15 credit hours for employment as a correctional officer in the state of Michigan. Student must earn a grade of "C" (2.0) or better in this course to meet this state requirement. (45-0)

**CJ 250 The Juvenile Offender 3 Sem Hrs**  
Major emphases are on the: Theories of causation as applied to juvenile delinquency; work of youth agencies; Michigan Juvenile Law and constitutional safeguards for juveniles; and new development in the prevention of juvenile crime. A student must earn a grade of "C" (2.0) or better in this course to obtain an Associate Degree in Criminal Justice. (45-0)

**CJ 270 Evidence and Criminal Procedure 3 Sem Hrs**  
A study of the rules of evidence as it affects the criminal justice process. Includes an overview of criminal procedure as it pertains to the rules of arrest, search, and seizure which regulate law enforcement and protects citizen's rights of privacy and presumed innocence. A student must earn a grade of "C" (2.0) or better in this course to obtain an Associate Degree in Criminal Justice. (45-0)

**CJ 271 Criminal Law 3 Sem Hrs**  
Prerequisite: A previous course in Criminal Justice or American Government or permission of the instructor. Elements and proof in crime of frequent concerns in law enforcement with reference to principal rules of criminal liability. Importance of criminal law at the enforcement level is considered from crime prevention to courtroom appearance. A student must earn a grade of "C" (2.0) or better in this course to obtain an Associate Degree in Criminal Justice. (45-0)

**CJ 275 Probation and Parole 3 Sem Hrs**  
Examines the process of probation and parole. Emphasizes management and supervision of individuals involved in the probation and parole process including interviewing, counseling techniques, and preparing court reports such as progress reports and pre-sentence investigations. (45-0)

**CJ 280 Internship in Criminal Justice 3 Sem Hrs**  
Prerequisite: Minimum 15 credits Criminal Justice courses and permission of faculty. Field placement in a criminal justice setting (police department, court, juvenile center, etc.). An attempt will be made to find field education placements compatible with students' interests and agency needs. (10-160)

**CJ 290-299 Special Projects in Criminal Justice**



## COMPUTER NUMERICAL CONTROL COURSES

### CNC 160 Computer Numerical Control Programming I

3 Sem Hrs

Prerequisites: MS 103 and either MTH 103 or MT 110 or basic knowledge of machining processes and trigonometry. Emphasizes manually programming machines with various capabilities, including absolute and incremental positioning systems; tab sequential, word address, and menu-driven formats; and machines with two-, three-, four-, and five-axis control. Includes emphasis on computer assisted programming. Credit may be earned in CNC 160 or SKCN 160 but not in both. (45-0)

### CNC 201 CNC Tooling and Special Setups

2 Sem Hrs

Prerequisite: MS 103 or MS 114 or basic knowledge of machining processes. Emphasizes carbide insert selection, cutting speed, feed, tool geometry, surface finish, and workplace fixturing. Stresses the history of cutting tools, manufacture of carbide, and advanced cutting materials. (30-0)

### CNC 210 Haas Turning Center

4 Sem Hrs

Prerequisite: MS 103 and MS 104, or SKTR 182; CAD 114 or SKCA 114, CNC 160 or SKCN 160, and CNC 201, or prior training or work experiences in machine tools, CAD, CNC programming, and carbide tooling. Emphasizes the programming methodology for producing quality parts using the Haas CNC turning center programming language, including EIA/ISO programming, tooling setups, part setups, machining, and mental attitudes. Includes parameters and maintenance. Uses the Haas SL-20 two-axis slant-bed rear turning center for demonstration and lab activity. Credit may be earned in either CNC 210 or SKCN 210, but not both. (0-100)

### CNC 211 Mitsubishi 410 Control

4 Sem Hrs

Prerequisites: CAD 114 or SKCA 114, MS 115 or SKTR 182, CNC 160 or SKCN 160, and CIS 118 or prior experience. Teaches program methodology to produce quality parts using Mitsubishi 410 EIA/ISO language, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses Saginaw Machine Systems Accu-Cell 410 two-axis flat-bed front turning center for demonstration and lab activities. Credit may be earned in CNC 211 or SKCN 211 but not in both. (0-100)

### CNC 212 Heidenhain TNC 151 Control

4 Sem Hrs

Prerequisites: CAD 114, MS 104 or MS 115, CNC 160, CIS 118 and instructor permission. Teaches program methodology to produce quality parts using the Heidenhain TNC-151 Dialog or EIA/ISO languages, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the Bridgeport Series II Interact II three-axis vertical milling machine for lab and demonstration. Credit may be earned in SKCN 212 or CNC 212 but not in both. (0-100)

### CNC 213 OSP 5000 LG Control

4 Sem Hrs

Prerequisites: CAD 114, MS 104 or MS 115, CNC 160, CIS 118 and instructor permission. Teaches programming methodology to produce quality parts using the OSP-5000 LG EIA/ISO language, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the Okuma LB-15 two-axis slant-bed rear turning center for demonstration and lab activities. Credit may be earned in SKCN 213 or CNC 213 but not in both. (0-100)

### CNC 214 Anilam GXM Control

4 Sem Hrs

Prerequisites: CAD 114, MS 104 or MS 115, CNC 160, CIS 118 and instructor permission. Teaches programming methodology to produce quality parts using the Anilam GXM EIA/ISO language, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the YCM Supermax 40 three-axis vertical milling machine for lab and demonstration. Credit may be earned in SKCN 214 or CNC 214 but not in both. (0-100)

### CNC 216 Mazatrol M-32/M-2 Control

4 Sem Hrs

Prerequisites: CAD 114, MS 104 or MS 115, CNC 160, CIS 118 and instructor permission. Emphasizes the programming methodology for producing quality parts using the Mazak M-32/M-2 Conversational programming language with secondary emphasis on tooling setups, part setups, and machining. Uses a Griffo Brothers, Inc., software package including: GB/Data Entry M-32, GB/GeoEntry M-32, GB/DataTransfer, GB/DataPrint M-32, and GB/DataTranslate M-32. Utilizes Delta College's Mazak VQC-15/40 M-2 four-axis double-column vertical machining center for program testing as well as employer's CNC equipment. Credit may be earned in either SKCN 216 or CNC 216 but not in both. (0-100)

### CNC 217 JAPAX JAPT 3J Control

4 Sem Hrs

Prerequisites: CNC 212, or CNC 214, or CNC 216 and instructor permission. Teaches the programming methodology for producing quality parts using the JAPT 3J EIA/ISO language, including wire alignment, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the Japax LV3 four-axis wire electrical discharge machine (EDM) for lab and demonstration. Credit may be earned in SKCN 217 or CNC 217 but not in both. (0-100)

### CNC 218 Boston Digital SPC-EIA/ISO Control

4 Sem Hrs

Prerequisite: CNC 216 and instructor permission. Teaches programming methodology to produce quality parts using the Boston Digital SPC-II EIA/ISO language, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the Boston Digital BostoMatic 1000 five-axis vertical machining system for lab and demonstration. Credit may be earned in SKCN 218 or CNC 218 but not in both. (0-100)

### CNC 219 Haas Machining Center

4 Sem Hrs

Prerequisite: MS 103 and MS 104, or SKTR 182; and CAD 114 or SKCA 114; CNC 160 or SKCN 160; and CNC 201, or prior training or work experiences in machine tools, CAD, CNC programming, and carbide tooling. Emphasizes the programming methodology for producing quality parts using the Haas CNC machining center programming language, including EIA/ISO programming, tooling setups, part setups, machining, and mental attitudes. Includes parameters and maintenance. Uses the Haas VF-OE four-axis vertical machining center for demonstration and lab activity. Credit may be earned in either CNC 219 or SKCN 219, but not both. (0-100)

### CNC 221 Surfcam

4 Sem Hrs

Prerequisites: CAD 114, MS 104 or MS 115, CNC 160, CIS 118 and instructor permission. Teaches off-line programming software for two-axis lathe work, up to five-axis mill work, and up to four-axis wire EDM work, operating on a PC and able to download to the General Numeric 10TF control on the MHP MTC-3 turning center, JAPT 3J control on the Japax wire EDM, as well as some of the other machining equipment. Emphasizes the creation of error free part programs using the SURFCAM programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the turning center, mill, machining center, or wire EDM. Credit may be earned in SKCN 221 or CNC 221 but not in both. (0-100)

### CNC 223 TM -APT- GL

4 Sem Hrs

Prerequisites: CAD 114, MS 104 or MS 115, CNC 160, CIS 118 and instructor permission. Teaches off-line programming software for two-axis lathe work, operating on an Okuma TM-APT -GL programming terminal downloading to the OSP-5000 LG control on the Okuma LB-15 turning center. Emphasizes the creation of error free part programs using the TM-APT-GL programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the turning center. Credit may be earned in SKCN 223 or CNC 223, but not in both. (0-100)



**CNC 225 Mastercam** 4 Sem Hrs  
Prerequisites: CAD 114, MS 104 or MS 115, CNC 160, CIS 118 and instructor permission. Uses an off-line programming software for up to four-axis lathe work, up to five-axis mill work, and up to four-axis wire EDM work, operating on a PC and downloading to the SPC-II control on the BostoMatic machining system, JAPT 3J control on the Japax wire EDM, as well as some other machining equipment. Emphasizes the creation of error free part programs using the MASTERCAM programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the turning center, mill, machining center/system, or wire EDM. Credit may be earned in SKCN 225 or CNC 225 but not in both. (0-100)

**CNC 226 CAM M-2/M-32** 4 Sem Hrs  
Prerequisites: CAD 114, MS 104 or MS 115, CNC 160, CIS 118 and instructor permission. Teaches programming methodology to produce error free programs using the Mazak M-2/M-32 EIA/ISO programming language on a PC with secondary emphasis on tooling setups, part setups, machining, and downloading to the Mazak VQC-15/40 M-2 four-axis double column vertical machining center using the Mazak CAM M-2 Programming software. Credit may be earned in SKCN 226 or CNC 226 but not in both. (0-100)

**CNC 227 The XL/N"C" Off-Line Programming System** 4 Sem Hrs  
Prerequisites: CAD 114, MS 104 or MS 115, CNC 160, CIS 118 and instructor permission. Uses an off-line programming software for two-axis lathe work, up to four-axis mill work, and up to four-axis wire EDM work operating on a PC downloading to the General Numeric 10TF control on the MHP MTC-3 turning center, Japt 3J control on the Japax LV3 wire EDM, as well as some of the other machining equipment. Emphasizes the creation of error free part programs using the XL/N"C" programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the turning center, mill, or machining center/system. Credit may be earned in SKCN 227 or CNC 227 but not in both. (0-100)

**CNC 230 ACU-CARV** 4 Sem Hrs  
Prerequisites: MS 104 or MS 115, CAD 114, CNC 161, CNC 201 and instructor permission. An off-line programming software for up to five-axis wire EDM work. Operates on a PC and is able to download to the JAPT 3J control on the Japax wire EDM, SPC-II control on the BostoMatic machining system, and other prismatic machining equipment. Emphasizes the creation of error-free part programs. (0-100)

**CNC 250 Advanced Haas Turning Center** 4 Sem Hrs  
Prerequisite: CNC 210 or SKCN 210, or prior training or work experience with Haas machining centers. Emphasizes canned cycles and subprograms, plus all aspects of producing quality parts using the Haas turning center programming language, including tooling setups, part setups, machining, and mental attitudes. Includes parameters and maintenance. Uses the Haas SL-20 two-axis slant-bed rear turning center for demonstration and lab activity. Credit may be earned in either CNC 250 or SKCN 250, but not both. (0-100)

**CNC 252 HEIDENHAIN TNC-151 Control Advanced** 4 Sem Hrs  
Prerequisite: CNC 212, and instructor permission. Emphasizes canned cycles and subprograms, plus all aspects of producing quality parts using the Heidenhain TNC-151 Dialog or EIA/ISO control, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the Bridgeport Series II Interact II three-axis vertical milling machine for lab and demonstration. Credit may be earned in SKCN 252 or CNC 252 but not in both. (0-100)

**CNC 253 OSP- 5000 LG Control Advanced** 4 Sem Hrs  
Prerequisite: CNC 213 and instructor permission. Teaches canned cycles and subprograms, plus all aspects of producing quality parts using the OSP-5000 LG EIA/ISO control, including tooling setups, part setups, and machining with secondary emphasis is on parameters and maintenance. Uses the Okuma LB-15 two-axis slant-bed rear turning center for lab and demonstration. Credit may be earned in SKCN 253 or CNC 253 but not in both. (0-100)

**CNC 254 Anilam GXM Control Advanced** 4 Sem Hrs  
Prerequisite: CNC 214 and instructor permission. Emphasizes canned cycles and subprograms, plus all aspects of producing quality parts using the Anilam GXM EIA/ISO control, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the YCM Supermax 40 three-axis vertical milling machine for lab and demonstration. Credit may be earned in SKCN 254 or CNC 254 but not in both. (0-100)

**CNC 256 Mazatrol M-2 Control Advanced** 4 Sem Hrs  
Prerequisite: CNC 216 and instructor permission. Teaches canned cycles, subprograms, and programming from CAD files using the Mazak M-32/M-2 conversational programming language with secondary emphasis on parameter and maintenance. Uses the Mazak VQC-15/40 M-2 four-axis double column vertical machining center for lab and demonstration. Credit may be earned in SKCN 256 or CNC 256 but not in both. (0-100)

**CNC 257 JAPAX Japt 3J Control Advanced** 4 Sem Hrs  
Prerequisite: CNC 217 and instructor permission. Teaches canned cycles and subprograms, plus all aspects of producing quality parts using the JAPT 3J EIA/ISO control, including wire alignment, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the Japax LV3 four-axis wire electrical discharge machine (EDM) for lab and demonstration. Credit may be earned in SKCN 257 or CNC 257 but not in both. (0-100)

**CNC 259 Advanced Haas Machining Center** 4 Sem Hrs  
Prerequisite: CNC 219 or SKCN 219, or prior training or work experience with Haas machining centers. Emphasizes canned cycles and subprograms, plus all aspects of producing quality parts using the Haas machining center programming language, including tooling setups, part setups, machining, and mental attitudes. Includes parameters and maintenance. Uses the Haas VF-OE four-axis machining center for demonstration and lab activity. Credit may be earned in either CNC 259 or SKCN 259, but not both. (0-100)

**CNC 261 Surfcam II** 4 Sem Hrs  
Prerequisites: CNC 221 and instructor permission. Teaches the advanced powers of Surfcam software for more intricate programming of two-axis lathe work, up to five-axis mill work, and up to four-axis wire EDM work, operating on a PC able to download to the General Numeric 10TF control on the MHP MTC-3 turning center, JAPT 3J control on the Japax LV3 wire EDM, as well as some of the other machining equipment. Emphasizes the creation of error free part programs using the SURFCAM programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the turning center, mill, machining center, or wire EDM. Credit may be earned in SKCN 261 or CNC 261 but not in both. (0-100)

**CNC 263 TM-APT-GL Advanced** 4 Sem Hrs  
Prerequisites: CNC 223 and instructor permission. Teaches the advanced powers of TM-APT-GL software for more intricate programming of two-axis lathe work, operating on an Okuma TM-APT-GL programming terminal and downloading to the OSP-5000 LG control on the Okuma LB-15 turning center. Emphasizes the creation of error free part programs using the TM-APT-GL programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the turning center. Credit may be earned in SKCN 263 or CNC 263 but not in both. (0-100)

**CNC 265 MASTERCAM Advanced** 4 Sem Hrs  
Prerequisites: CNC 225, and instructor permission. Teaches the advanced powers of MASTERCAM software for more intricate programming of up to four-axis lathe work, up to five-axis mill work, and up to four-axis wire EDM work, operating on a PC and downloading to the SPC-II control on the BostoMatic machining system, JAPT 3J control on the Japax wire EDM, as well as other machining equipment. Emphasizes the creation of error free part programs using the MASTERCAM programming language, including part geometry, tool path, and debugging with secondary emphasis on downloading a program to the turning center, mill, machining center/system, or wire EDM. Credit may be earned in SKCN 265 or CNC 265 but not in both. (0-100)



**CNC 266 CAM M-2/M-32 Advanced****4 Sem Hrs**

Prerequisites: CNC 226 and instructor permission. Teaches the use of macros, macro programming methodology, macro call statements, and nesting using the Mazak M-32/M-2 EIA/ISO programming language with secondary emphasis on parameters and maintenance. Software is ASCII text editor and a Griffio Brothers, Inc. GB/DataEntry M-32, GB/GeoEntry M-32, GB/DataTransfer, GB/DataPrint M-32, and GB/DataTranslate M-32 running on a PC. Uses the Mazak VQC-15/40 M-2 four-axis double column vertical machining center for demonstration and lab. Credit may be earned in SKCN 266 or CNC 266 but not in both. (0-100)

**CNC 270 ACU.CARV Advanced****4 Sem Hrs**

Prerequisites: CNC 230 and instructor permission. Using the advanced powers of the ACU.CARV software for more intricate programming of up to five-axis mill work and up to four-axis wire EDM work, operating on a PC and able to download to the JAPT 3J control on the Japax wire EDM, SPC-II control on the BostoMatic machining system, as well as some of the other prismatic machining equipment in the CNC lab. Primarily emphasizes creation of error free part programs using the ACU.CARV programming language, including part geometry, tool path, and debugging. Focuses on the downloading of a program to the mill, machining center/system, or wire EDM. One hundred (100) hours will be lab and demonstration. Credit may be earned in either SKCN 270 or CNC 270 but not in both. (0-100)

**CNC 280 ACU.CARV ADS Off-Line Programming System****4 Sem Hrs**

Prerequisite: CNC 270 and instructor permission. Emphasizes the use of AutoCAD and ACU.CARV ADS software to create surfaces and tool paths for programming of up to five-axis millwork and up to four-axis wire EDM work. Includes the downloading of error-free PC created programs to JAPT 3J control on the Japax wire EDM, SPC-II control on the BostoMatic machining system, as well as some other prismatic machining equipment. Credit may be earned in CNC 280 or SKCN 280 but not in both. (0-100)

**CNC 284 CNC Practicum****4 Sem Hrs**

Prerequisite: Instructor permission. Teaches students to use actual working drawings of their own or those supplied by instructor to program, setup, and machine a sample lot of parts to simulate a production run. (0-100)

**CNC 290-299 Special Projects in Computer Numerical Control****CHEMICAL PROCESS INDUSTRIES COURSES****CPI 110 Introduction to Chemical Process Industries****2 Sem Hrs**

Concurrent enrollment in CPI 120 strongly recommended. Provides overview of Chemical Process Industries and Chemical Technology with focus on the role of the process operator and the chemical technician. Introduces concepts of safety, regulation, laws affecting the job and the industry, and quality control. Includes study skills and attitudes necessary for study of science/technology as well as means of continuing professional and personal growth. Credit may be earned in CPI 110 or CT 100 but not both. (30-0)

**CPI 120 Introduction to Process Operations****2 Sem Hrs**

Concurrent enrollment in CPI 110 strongly recommended. Provides an overview of process operations including analysis of process flow sheets. Details description and analysis of operations as they involve reactors, distillation columns, heat exchangers, and other types of operations in the typical chemical plant. (30-0)

**CPI 210 Basic Chemical and Unit Operations****4 Sem Hrs**

Prerequisite: MTH 097 with a minimum "C" grade or an acceptable score on the current college assessment instrument, and completion of CHM 105, CPI 110 and CPI 120 (each with a minimum "C" grade). Concurrent enrollment in CPI 220 required. Provides understanding of basic principles of process technology along with an introduction to the use and operations of standard process equipment used worldwide by process technicians. Includes principles of energy and heat, pressure, fluid flow, heat transfer as well as topics concerning quality control and unit operations. Gives student operational experiences with valves, pumps, compressors, distillation towers, and other process equipment and instrumentation. (45-45)

**CPI 220 Process Measurement****3 Sem Hrs**

Prerequisite: MTH 097 with a minimum "C" grade or an acceptable score on the current college assessment instrument, and completion of CHM 105, CPI 110 and CPI 120 (each with a minimum "C" grade). Concurrent enrollment in CPI 210 required. Provides an understanding of process measurement methods and the application of process instrumentation. Process measurements discussed include pressure measurement, temperature measurement, flow measurement, product level measurement, and analytical measurement. (45 - 0)

**CPI 230 Process Control****3 Sem Hrs**

Prerequisite: CHM 106, PHY 101, CPI 210 and CPI 220 (each with a minimum "C" grade). Concurrent enrollment in CPI 240 required. Provides an introduction to basic process control concepts. Discusses controllers/control valves, instrument and process control, statistical process control (SPC), run and flow charts, quality systems, team concepts, and environmental health and safety issues. (45-0)

**CPI 240 Process Troubleshooting****3 Sem Hrs**

Prerequisite: CHM 106, PHY 101, CPI 210 and CPI 220 (each with a minimum "C" grade). Concurrent enrollment in CPI 230 required. Provides problem solving skills used to maintain and monitor process equipment employing cause and effect analyses, case studies, analytical techniques, and laboratory simulations. Involves troubleshooting unit problems, maintaining, monitoring, and inspecting equipment, placing and/or removing equipment in service, and working with others who operate and maintain processes (maintenance technicians, laboratory technicians, engineering, administrative and construction personnel). (30-30)

**CPI 250 Advanced Chemical Operations****4 Sem Hrs**

Prerequisites: CPI 230 and CPI 240 (each with a minimum of "C" grade) Concurrent enrollment in CPI 260 required. Provides hands-on simulations that demonstrate mechanical and measurement principles involved in the operation and control of chemical processes. Includes student/team operation of a process simulator under normal operating conditions as well as the operations of tanks, pumps, valves, heat transfer equipment, steam traps, filters, and process instrumentation. (45-30)

**CPI 260 Process Operations Management****4 Sem Hrs**

Prerequisite: CPI 230 and CPI 240 (each with a minimum of "C" grade). Concurrent enrollment in CPI 250 required. Provides capstone experience for chemical process operation students/technicians. Focuses on demonstrated student skills in the use of control charts, P&ID's, verification of systems, units, and equipment, and development of critical values for SPC. Provides opportunity for students to present plans (including PSM and environmental management systems) and procedures for start-up and run, shut down operations, and present results of pilot project run. Emphasizes the value and function of the team in process operations as well as quality control, and environmental health and safety issues (45-45).

**CPI 290-299 Special Projects in Chemical Process Industries Courses****CENTRAL SERVICE PROCESSING AND DISTRIBUTION TECHNICIAN COURSES****CSP 101 Central Service Processing I****4 Sem Hrs**

Concurrent enrollment in CSP 102. Provides the fundamentals of central service, supply, processing and distribution (CSD). Uses instruction and practice in aseptic technique, patient centered concept theories, and practices of central service departments. Provides the opportunity to sit for the American Society for Healthcare Central Service personnel (ASHCSP) National Certifying Examination. (60-0)

**CSP 102 Central Service Processing II****4 Sem Hrs**

Concurrent enrollment in CSP 101. Provides supervised clinical experience in hospital central processing departments. Evaluates progress in the theoretical, behavioral, and practical application of concepts of sterile processing. (0-60)

**CSP 290-299 Special Projects in Central Service Processing and Distribution Technician Courses**



## COMPUTER SCIENCE AND INFORMATION TECHNOLOGY COURSES

- CST 091 Beginning Computer Concepts** 1 Sem Hr  
Presents the terminology needed to become familiar with computer hardware and software. Provides a first exposure to the Windows Operating system and Word Processing, Internet, and Spreadsheet applications in a hands-on setting. Assists those who lack familiarity with computer technology or whose initial assessment scores in Reading are below developmental. This course does not count towards graduation. (15-0)
- CST 103 Windows Foundations** 1 Sem Hr  
Provides a basic introduction to the Microsoft Windows Operating System. Includes the creation of folders and use and review of the basic concepts of storage on floppy and hard disk. Introduces the basic features of Windows including menus, icons, dialog boxes, and the title and menu bars. Emphasizes the use of multi tasking. (15-0)
- CST 104 Microsoft Word Foundations** 1 Sem Hr  
Prerequisite: OAT 170 or OSE 170 or equivalent. Introduces the Word for Windows word processing program. Teaches how to create, format, save, retrieve, edit, and print documents. Credit may be earned in CST 104 or OSE 212, but not both. (15-0)
- CST 106 Internet Foundations** 1 Sem Hr  
Develops skills to access and use the Internet emphasizing easy information retrieval. Introduces essential Internet areas such as E-Mail and the use of Graphical Web Browsers. Credit may be earned in only one of the following: CST 106, CPS 160, CIS 160 or CIS 161. (15-0)
- CST 110 Web Page Design** 1 Sem Hr  
Prerequisite: CST 106 or CIS 160 or CPS 160 or instructor permission. Develops skills to create and maintain a basic Web page using HTML. Includes text formatting, graphics insertion, and the use of links to other pages. (15-0)
- CST 114 JavaScript Programming** 2 Sem Hr  
Prerequisite: CST 110 or equivalent HTML experience. Introduces the JavaScript programming language to control elements of web pages and create independent applications. Includes JavaScript programming fundamentals, forms, basic scripting of windows and frame, controlling navigation, manipulating files and image, and dynamically generated content. (30-0)
- CST 115 e-Commerce Concepts** 3 Sem Hrs  
Provides an explanation of traditional commerce and e-commerce, which is doing business over the web. Describes an overview of the economic structures in which businesses operate and describe how electronic commerce fits into those structures. Includes a review of different Web-based tools, the software necessary, security concerns and strategies for Marketing, Sales and Promotion on the Web. (45-0)
- CST 120 PC Operating System Command Line Interface (DOS)** 1 Sem Hr  
Provides a basic introduction to Command Line Operating Systems Interface using the Disk Operating System as an example. Includes basic commands and commands for managing files and directories. Introduces the basic features of configuration of this type of operating system. Includes the creation and use of batch files. (15-0)
- CST 121 Introduction to AS400 and PROFS** 1 Sem Hr  
Provides a basic orientation to the IBM AS/400. Describes office operations such as Electronic Mail and Calendar Scheduling. Teaches creating files, inputting screens, and compiling and executing programs. Lab assignments are required. Credit may be earned in CST 121 or CIS 112, but not both. (15-0)

**CST 123 Windows Operating System** 1 Sem Hr  
Prerequisite: CST 103. Provides a continuing orientation to PC Operating Systems. Emphasizes the Windows Operating System features needed in the daily operation of microcomputers including customizing and managing the desktop, maintaining the system and backing up data. Includes the customizing of windows for increased productivity, creation of graphics and the concepts of Object Linking and Embedding. (15-0)

**CST 126 UNIX Operating System** 2 Sem Hrs  
Provides a basic orientation to the UNIX Operating System. Emphasizes how to create, display, copy and print files. Includes how to work with directories, and how to connect to the Internet. Credit may be earned in CST 126 or CIS 109, but not both. (30-0)

**CST 128 PC Hardware Concepts and Troubleshooting** 4 Sem Hrs  
Prerequisite: Basic computer literacy. Uses hands-on experiences to examine the internal hardware components of IBM compatible computers with an emphasis on troubleshooting and repair. Discusses interaction of operating system and hardware in running application programs. Explores upgrading and optimizing computers to solve typical hardware and software problems (60-0)

**CST 130 Fundamentals of Computer Computation** .5 Sem Hr  
Provides a basic introduction to computations done within a personal computer. Introduces the decimal, binary, octal and hexadecimal number systems; how to convert from one to another; and how to perform binary arithmetic. Includes bit representation of numerical integer and floating point data and the ASCII code that represents characters. Introduces logic used in computers (AND, OR, NOT). (7.5-0)

**CST 132 Computer Literacy on the Macintosh** 3 Sem Hrs  
Introduces computers and their applications, programming and operating systems. Examines applications such as word processing, database, spreadsheet, and graphics. Includes the specialized vocabulary of computers with major emphasis on the use of Macintosh computers. May not be substituted for CST 133, CIS 133. Credit may be earned in CST 132 or CPS 125, but not both. (45-0)

**CST 133 Introduction to Computer Information Technology** 4 Sem Hrs  
Presents the terminology needed to become computer literate including hardware, software and connectivity. Reviews the analysis and design of computer systems and their effect on our lives. Introduces micro and mini computers, different operating systems, and Windows applications: word processing, e-mail, spreadsheets, database, graphics, and programming. Credit may be earned in CST 133 or CIS 133, but not both. (60-0)

**CST 134 Micro Computers in Business Using MS Office** 3 Sem Hrs  
Surveys small computer systems used for personal, business, and industrial applications including hardware, software, and operating systems. Uses MS Office for word processing, spreadsheets, and database software as well as the evaluation and selection of systems. Credit may be earned in CST 134 or CIS 120, but not both. (45-0)

**CST 146 Desktop Publishing - PageMaker** 2 Sem Hrs  
Prerequisite: OAT 170 or OSE 170 and a thorough working knowledge of at least one word processing software package or equivalent. Provides the student with an electronic tool to completely design a finished document. Emphasizes page design with text/graphics merging. Utilizes Windowing environments (Microsoft & PageMaker) and the mouse system. Examines desktop publishing principles (including a historical perspective) as well as pre-press operations. Analyzes similarities and differences between word processing and desktop publishing. Outside lab assignments are required. Credit may be earned in CST 146 or OSE 195, but not both. (30-0)



**CST 147      Presentation Graphics Using PowerPoint      2 Sem Hrs**

Prerequisite: CST 103 or knowledge of the windows operating system. Develops beginning/intermediate skills in presentation and graphic layout for business and education presentations. Includes computer projection and creating of computer-generated transparencies and handouts. Focuses on developing attractive, professional, effective, and well-timed visuals for different business settings using computer graphic presentation software. Credit may be earned in only one of the following: CST 147, CIS 201 or OSE 201. (30-0)

**CST 148      WordPerfect for Windows: Beginning      1 Sem Hr**

Prerequisite: OAT 170 or OSE 170 or instructor permission. Introduces the WordPerfect for Windows word processing program. Students will create, format, save, retrieve, edit, and print documents. Credit may be earned in CST 148 or OSE 192, but not both. (15-0)

**CST 151      Spreadsheet Fundamentals      2 Sem Hrs**

Prerequisite: CST 103 or Windows experience or permission of instructor. Surveys Microsoft Excel on the IBM PC including evaluation of spreadsheets, data base, graphics, report formatting and macros as applied to personal small business and industrial settings. Credit may be earned in only one of the following: CST 151, CIS 132, CST 155, CIS 136. (30-0)

**CST 155      Microsoft EXCEL      3 Sem Hrs**

Presents EXCEL features using personal and business applications. Emphasizes features and techniques to develop solutions to spreadsheet problems. Includes evaluation of spreadsheets, data base, report formatting, and macros. Compares EXCEL with other electronic spreadsheets. Credit may be earned in only one of the following CST 151, CIS 132, CST 155, or CIS 136. (45-0)

**CST 161      Networking Essentials      2 Sem Hrs**

Prerequisites: CST 133 or CIS 133. Covers concepts, architectures, standards, protocols, designs, and media of data communications and network technology. (30-0)

**CST 162      Introduction to Novell Network Administration      2 Sem Hrs**

Prerequisite: CST 161. Introduces Novell NetWare. Covers installing NetWare, adding and deleting users, working with Novell Directory Services, setting up network printers, and maintaining security. (30-0)

**CST 163      Introduction to Windows Network Administration      2 Sem Hrs**

Prerequisite: CST 161. Introduces Microsoft Windows Networking. Covers installing Microsoft Windows, adding and deleting users, working with Active Directory, setting up network printers, and maintaining security. (30-0)

**CST 170      Principles of Computer Programming I      1 Sem Hr**

Introduces fundamental concepts and techniques used to design computer programs. Includes problem definition, algorithm development, and program documentation. A programming language will be used to implement the design concepts. (15-0)

**CST 171      Visual BASIC Programming I      2 Sem Hrs**

Introduces Visual Basic as a first class for Micro Computer programmers. BASIC commands will be used in a Windows environment. Implementation of objects and event driven code will be emphasized. Screen design and Microsoft Visual Basic controls will be taught. Teaches structured programming principles including internal and external program documentation; sequence, selection and iteration constructs; and modular programming. Credit may be earned in only one of the following: CST 171, CIS 139, or CPS 140. (30-0)

**CST 174      Fortran Programming      3 Sem Hrs**

Prerequisite: MTH 119. Introduces the FORTRAN programming language as an aid to problem solving. Emphasizes solving scientific or mathematical problems. Requirements include writing, debugging and executing several programs. Credit may be earned in CST 174 or CPS 165, but not both. (45-0)

**CST 177      Principles of Computer Programming II      1 Sem Hr**

Prerequisite: CST 170. Uses programmer tools to design, develop the logic, and document programs. VTOCs (Visual Table of Contents), flowcharts, state transition diagrams will be used. Emphasizes logic walk throughs and team development. Credit may be earned in CST 177 (formerly CST 270) or CIS 130, but not both. (15-0)

**CST 181      C++ Programming      3 Sem Hrs**

Prerequisite: CST 170 or equivalent introductory programming experience. Uses the C++ language to introduce programming foundations. Develops solutions to computing problems through algorithm design, development, and implementation. Includes documentation and formatting of output. Introduces object-oriented concepts. Credit may be earned in only one of the following: CST 181, CIS 170, CPS 170 or EGR 170. (45-0)

**CST 183      Java Programming      3 Sem Hrs**

Prerequisites: Introductory computer programming experience, preferably with C++. Introduces the Java programming language with applications and applets. Emphasizes Java classes and object-oriented programming concepts. Includes control structures, string handling, arrays, graphics, files, and use of Java graphical user interface components. Introduces exception handling, multimedia, and multithreading. Credit may be earned in only one of the following: CST 183, CIS 180 or CPS 180. (45-0)

**CST 204      Microsoft Word: Intermediate      2 Sem Hrs**

Prerequisites: CST 104 or OSE 212 or permission of instructor. Develops further the practical working knowledge of Word for Windows software. Refines formatting and focuses on page layout and design. Credit may be earned in CST 204 or OSE 213, but not both. (30-0)

**CST 210      Advanced Web Page Design      2 Sem Hrs**

Prerequisite: One of the following: CST 110, CIS 160, CPS 160, CIS 161 or HTML Web Page knowledge. Previous Windows 95 experience highly desirable. No programming experience is needed. Creates an advanced web page on the Internet for personal or business applications. Includes concepts and tools but not limited to: Java, CGI scripts (for page hit counters, image maps, etc.), animated graphics, frames, tables, forms, VRML, advanced HTML. Discusses Internet issues such as ethics, etiquette and security. Examines the differences between Netscape and MS Internet Explorer and the effect they have on displaying web pages. (30-0)

**CST 216      Web Page Administration Using Front Page      3 Sem Hrs**

Prerequisite: CST 110 or CIS 160 or CPS 160. Explores the design and management of web sites using a variety of software applications. Uses hands-on experiences to create advanced web pages including hyperlinks, lists, tables, frames, forms, graphics, and special effects. (45-0)

**CST 217      Web Server Programming      3 Sem Hrs**

CST 210 or equivalent web development experience. Introduces web server programming for processing user interactions with an Internet server. Focuses on processing web page form information, dynamically creating web pages, executing data-driven applications on a Web server, and performing various interactions with a Web user. (45-0)

**CST 228      Advanced PC Troubleshooting (A+)      4 Sem Hrs**

Prerequisite: Basic computer literacy and/or instructor permission. Covers common and advanced Microsoft Windows interface troubleshooting problems and techniques for solving them. Discusses function and structure of Microsoft Windows environment for managing files and directories; installing, configuring, customizing, and upgrading Windows environment and navigating through the operating system to access and retrieve information. Reviews Internet access concepts and setup. (60-0)

**CST 221      Information Storage and Retrieval      3 Sem Hrs**

Prerequisites: CST 121 or CIS 112, and CST 133 or CIS 133. Provides a basic understanding of the AS400 operating system, OS/400. Introduces students to work management and practice managing jobs, messages, and reports. Introduces the AS/400 data base, DD2/400, and creation of files with which to add, change, delete, and query data. Credit may be earned in CST 221 or CIS 135, but not both. (45-0)



**CST 226 Local Area Networks** 4 Sem Hrs  
Prerequisite: CST 123 or CIS 118, and CST 133 or CIS 133 or Microcomputer background. Covers concepts, architectures, and implementation of Local Area Network (LAN) technology as well as a review of the evolution of Data Communications to its current status. Outside lab assignments and project required. Credit may be earned in CST 226 or CIS 216, but not both. (60-0)

**CST 228 WINDOWS NT Operating System** 4 Sem Hrs  
Prerequisite: Microcomputer background. Basic orientation to the WINDOWS NT Operating System. Emphasizes creation, copying, and recovery of files and the use of applications within this operating system that are needed for its daily operation. Presents installation and customizing features. Credit may be earned in CST 228 or CIS 128, but not both. (60-0)

**CST 235 Systems Analysis and Design** 3 Sem Hrs  
Prerequisite: CST 133 or CIS 133, and CST 170 or CIS 130, 1 semester of accounting, and a programming language course. Includes study of data processing systems and procedures involving analysis of various existing data processing applications in business and industry. Includes a study of integrated or total management information and data processing systems. Emphasis is given to developing detailed procedures in various areas of management. Designed to study the three-phases: Analysis of present information flow; system specification and equipment; implementation and documentation of the system. Credit may be earned in CST 235 or CIS 235, but not both. (45-0)

**CST 238 GM Information Technology** 2 Sem Hrs  
Develops skills to use the current operating system on a computer. Introduces essential elements of computerized automotive technical support systems. Credit may be earned in CST 238 or CIS 108, but not both. (30-0)

**CST 244 Corel Draw** 2 Sem Hrs  
Prerequisites: CST 146 or OSE 195 (with a minimum grade of "C"). Develops beginning/intermediate skills in graphic creation and manipulation for business and education. Includes drawing geometric and free form images as well as enhancing imported graphics and altering/enhancing existing clip art, scanned photos, etc. Emphasis is on the development of professional and effective visuals for newsletters, pamphlets, letters, reports, etc. Credit may be earned in CST 244 or OSE 198, but not both. (30-0)

**CST 247 MMII: Advanced Presentation Graphics** 2 Sem Hrs  
Prerequisites: CST 147 or OSE 201 or CIS 201 or equivalent. Develops advanced skills in professional electronic presentations by incorporating video/sound clip files, animation sequences, voiceovers, and explores gray-scale and 24-bit color to produce a sequence of visuals for a variety of professional settings. Credit may be earned in CST 247 or OSE 202, but not both. (30-0)

**CST 248 Wordperfect for Windows: Intermediate** 2 Sem Hrs  
Prerequisites: CST 146 or OSE 192 or permission of instructor. Further develops the practical working knowledge of Wordperfect for Windows software. Refines formatting and focuses on page layout and design. Credit may be earned in CST 248 or OSE 193, but not both. (30-0)

**CST 257 Database MS Access** 3 Sem Hrs  
Prerequisite: Any microcomputer class. Emphasizes the advantages of database processing, modeling, and design. Discusses design concepts from the standpoint of the user. Uses MicroSoft ACCESS. Credit may be earned in CST 257 or CIS 260, but not both. (45-0)

**CST 271 Visual BASIC Programming I** 3 Sem Hrs  
Prerequisites: CST 171 or CIS 140. Writes programs in a windows environment using visual basic to design custom user interfaces with menus and dialogue boxes. Discusses object-oriented fundamentals and event-driven programming concepts. Includes work with object linking and embedding (OLE) and creation of an engine for database access. Credit may be earned in CST 271 or CIS 240, but not both. (45-0)

**CST 273 MS Applications Using Visual BASIC** 2 Sem Hrs  
Prerequisite: CST 271 or CIS 140. Emphasizes writing advanced applications in the windows environment using visual basic. Discusses linking to other Windows applications, manipulating databases, and handling run-time errors. Includes creating user-friendly executable applications. Credit may be earned in CST 273 or CIS 241, but not both. (30-0)

**CST 275 COBOL Programming I** 3 Sem Hrs  
Prerequisite: CST 121 or CIS 112 and CST 170 or CIS 130 or permission of instructor. Includes the advantages of Structured Cobol, potential applications and basic syntax. Emphasizes interactive programs, single dimension arrays and file access methods. Implements programs on an IBM AS/400. Credit may be earned in CST 275 or CIS 245, but not both. (45-0)

**CST 276 COBOL Programming II** 3 Sem Hrs  
Prerequisite: CST 275 or CIS 245 or consent of instructor. Includes advanced programming concepts, multiple dimension arrays, Sort/Merge, Screen Design Aid and subprograms. Credit may be earned in CST 276 or CIS 255, but not both (45-0)

**CST 281 Data Structures Using C++** 3 Sem Hrs  
Prerequisite: One of the following: CST 181, CIS 170, CPS 170, EGR 170, or CPS 171. Introduces important data structures, data abstractions, and object-oriented programming. Includes recursive programming solutions, sorting and searching algorithms, and pointer variables. Studies key data structures including lists, stacks, queues, and trees. Credit may be earned in CST 281 or CPS 271, but not both. (45-0)

**CST 282 C++ Object-Oriented Programming** 2 Sem Hrs  
Prerequisite: CST 281 or CPS 271. Studies object-oriented programming concepts through the use of the C++ Language. Analyzes relationships between "C" and C++. Includes the use of classes, encapsulation, polymorphism, and inheritance for program design. Credit may be earned in CST 282 or CIS 266, but not both. (30-0)

**CST 392 Instructional Technology for Educators** 3 Sem Hrs  
Introduces software and internet applications technology for educators. Includes effective use of the Internet with e-mail, web usage and searching. Introduces tools for creation and modification of web pages. Includes various applications and techniques useful for teachers including presentation software, scanning and capturing graphics, spreadsheets, and classroom management tools. (45-0)

**CST 290-299 Special Projects in Computer Science and Information Technology**

## DENTAL ASSISTING COURSES

**DA 110 Pre Clinical Dental Assisting** 5 Sem Hrs  
DA 113, DA 114, and DA 117 must be taken concurrently. Provides the opportunity to develop the skills for general chair side clinical procedures. Implements OSHA's practical skills. (30-90)

**DA 113 Oral Anatomy and Physiology** 4 Sem Hrs  
DA 110, DA 114, and DA 117 must be taken concurrently. Introduces basic structures and physiology of the oral cavity, head and neck. Includes oral histology, embryology, and pathology related to the development of the dental structure. (60-0)

**DA 114 Dental Materials** 1 Sem Hr  
DA 110, DA 113, DA 117 must be taken concurrently. Introduces the theory and properties of dental materials. Emphasizes direct dental restoration procedures. (15-0)

**DA 117 Dental Health and Nutrition** 1 Sem Hr  
DA 110, DA 113, and DA 114 must be taken concurrently. Emphasizes oral hygiene, general and applied nutrition as well as patient motivation techniques. Dental health projects required. (15-0)



**DA 119 CDA Practical 8 Sem Hrs**  
Prerequisites: Verification by Health and Wellness Division Chair of current CDA certification. Prepares the currently Certified Dental Assistant to take DA 128—Expanded Dental Functions. Work experience and special assignments required. (30-300)

**DA 120 Clinical Dental Assisting 6 Sem Hrs**  
Prerequisites: BIO 102, DA 110, DA 113, DA 115, DA 117, and HSC 140. DA 123, DA 123L, DA 125, and BIO 101 must be taken concurrently. Presents the theory and application of dental specialties. Requires assignments in off campus facilities and Dental Hygiene Clinic. (45-90)

**DA 123 Dental Radiology 2 Sem Hrs**  
Prerequisites: BIO 102, DA 110, DA 113, DA 114, DA 117, HSC 140. Concurrent enrollment in DA 120, DA 123L, and DA 125. Introduces the principles of radiation physics, factors affecting radiographic images, biological effects of radiation, and the protective measures necessary in dental radiation. (30-0)

**DA 123L Dental Radiology Lab 2 Sem Hrs**  
Prerequisites: BIO 102, DA 110, DA 113, DA 114, DA 117, and HSC 140. Concurrent enrollment in DA 120, DA 123, and DA 125. Provides laboratory practice in the application of commonly used dental radiographic procedures utilizing manikins and clinic patients. Credit may be earned in DA 123L or DH 123L but not both. (0-60)

**DA 125 Dental Materials II 2 Sem Hrs**  
Prerequisites: BIO 102, DA 110, DA 113, DA 114, DA 117, HSC 140. Concurrent enrollment in DA 120, DA 123, DA 123L. Introduces the theory and manipulation of indirect and adjunct restorative procedures. (15-30)

**DA 126 Dental Laboratory Procedures 1 Sem Hr**  
Prerequisites: Completion of DA 110, DA 113, BIO 102, and HSC 140 with a "C" (2.0) minimum grade in each. The manipulation of impression materials and gypsum products. Field trips may be required. (0-30)

**DA 128 Expanded Dental Functions 3 Sem Hrs**  
Prerequisites: DA 120, DA 123, DA 123L, DA 125, and BIO 101. Concurrent enrollment in DA 129 OR completion of DA119 and BIO 101. Provides knowledge and skills needed to perform expanded functions as permitted by the current rules and regulations of the Department of Consumer and Industry Services, Michigan Board of Dentistry. (15-60)

**DA 129 Dental Office Management 3 Sem Hrs**  
Prerequisite: Completion of DA 120, DA 123, DA 123L, DA 125 and BIO 101 with a minimum "C" (2.0) grade in each. Concurrent enrollment in DA 128. Emphasizes fundamental office skills in managing patient and business records, handling the telephone and visitors, controlling the appointment book, and processing dental claim forms. Includes basic financial procedures and computer use. (45-0)

**DA 130 Dental Assisting Internship 7 Sem Hrs**  
Prerequisite: Completion of DA 128, DA 129 with a minimum of "C" (2.0) minimum grade. Concurrent enrollment in DH 133. Provides the opportunity to perform chairside assisting techniques, laboratory procedures, and dental office management skills while under direct supervision. Students will be assigned to local dental care facilities. (0-320)

**DA 133 Dental Assisting Internship Seminar 1 Sem Hr**  
Prerequisite: DA 128 and DA 129. Concurrent enrollment in DA 130. Allows students opportunities to share internship experiences and future educational goals. Develops resume writing and job seeking skills. (15-0)

**DA 250 Radiography for Dental Auxiliaries 3 Sem Hrs**  
Prerequisite: Knowledge of dental anatomy and terminology plus current employment of at least one year as a chair side dental assistant. Introduces the theory and application of radiation characteristics, production, protection and exposure effects related to the production of diagnostic radiographs. Students must provide patients for laboratory activities. (24-21)

**DA 290-299 Special Projects in Dental Assisting**

## DENTAL HYGIENE COURSES

**DH 100 Dental Hygiene Profession 1 Sem Hr**  
Provides overview of the Dental Hygiene Profession including the history and organizational structure of the American Dental Hygiene Association, and the ethical/legal aspects of the profession. Required dental office observation required. (15-0)

**DH 101 Dental Anatomy I 2 Sem Hrs**  
Examines terminology of dental anatomy, morphology of the human dentitions and occlusion. (30-0)

**DH 110 Dental Infection Control 2 Sem Hrs**  
Prerequisite: Current validation for Dental Hygiene Program. Presents theory and application of procedures and skills necessary to control transmissible diseases. Provides opportunities to practice Universal Precautions for the patient, professional, environment, and facilities. (15-30)

**DH 111 Oral Examinations 1 Sem Hr**  
Prerequisite: DH 100 and 101 each with a "C" (2.0) minimum grade and admission to the Dental Hygiene Program. Provides opportunity to practice skills necessary to perform dental charting and oral cancer examinations. Examines the various parts of dental appliances. (0-30)

**DH 112 Medical Assessment/Emergencies 2 Sem Hrs**  
Prerequisites: DH 100 and 101 each with a "C" (2.0) minimum grade, current HCP CPR certification and admission to the Dental Hygiene Program. Provides the opportunity to practice assessment, identification, and dental hygiene treatment protocol of septicemic emergencies which may occur in treating the dental patient. (15-30)

**DH 114 Oral Health 2 Sem Hrs**  
Prerequisites: DH 100 and 101, each with a "C" (2.0) minimum grade and admission to the Dental Hygiene Program. Presents theory of the characteristics, origin, and development of fluoride, dentifrices, mouthwashes, and deposits that affect the tooth surface. Emphasizes tooth brushing, auxiliary aids, dental appliances, care of pre/post surgical and oral cancer patients. (15-45)

**DH 115 Clinical Techniques 5 Sem Hrs**  
Prerequisites: DH 100 and 101 each with a "C" (2.0) minimum grade and admission to the Dental Hygiene Program. Presents theory and application of various periodontal instruments, plaque and stain removal and instrument sharpening skills that are necessary for proper use in the dental hygiene diagnostic and therapeutic services. Emphasizes proper documentation of findings. (45-90)

**DH 116 Prevention Nutrition 3 Sem Hrs**  
Prerequisites: DH 100 and 101, each with a "C" (2.0) minimum, grade and admission to the Dental Hygiene Program. Provides theory of foods, essential nutrients and their effects on general health as well as oral health. Emphasizes nutrition in dentistry for the dental hygienist in prevention and health promotion. (45-0)

**DH 118 Head and Neck Anatomy 3 Sem Hrs**  
Prerequisites: DH 100 and 101, each with a "C" (2.0) minimum grade and admission to the Dental Hygiene Program. Presents anatomy of the human head and neck and surrounding structures. Emphasizes basic anatomical terminology, landmarks, and a complete description of the skeletal, muscular, lymphatic, vascular, and innervation systems. (30-45)

**DH 120 Periodontics I 3 Sem Hrs**  
Prerequisites: DH 110, 114, 115, 116, 117 and 118 each with "C" (2.0) minimum grade. The student must understand the biology of the periodontium; the etiology; pathology, and epidemiology of periodontal diseases, and the prevention and treatment of periodontal diseases. (30-0)

**DH 121 DH Seminar I 2 Sem Hrs**  
Prerequisites: DH 110, 111, 112, 114, 115, 116, and 118 each with a "C" (2.0) minimum grade. Introduces fundamentals of treatment planning, recall systems, case study documentation, patient management, techniques for clinical fluoride and care of the dental appliances. (30-0)

- DH 122 Oral Histology and Embryology** 3 Sem Hrs  
Prerequisites: DH 110, 111, 112, 114, 115, 116, and 118 each with a "C" (2.0) minimum grade. Provides theory of the embryological development of the oral cavity and identification and classifications of normal and abnormal conditions of the oral cavity and supporting structures. Includes microscopic study of the histology of the human dentition and the surrounding supporting structures. (45-0)
- DH 123 Dental Radiography** 2 Sem Hrs  
Prerequisites: DH 110, 111, 112, 114, 115, 116, and 118 each with a "C" (2.0) minimum grade. Presents theory of characteristics of radiation, components and functions of x-ray equipment, x-ray production, radiation biology and safety as well as processing and technical errors. (30-0)
- DH 123L Dental Radiography Lab** 1 Sem Hr  
Prerequisites: DH 110, 111, 112, 114, 115, 116, and 118 each with a "C" (2.0) minimum grade. Introduces the techniques of exposing, processing, and mounting dental radiographs, as well as radiographic interpretation. (0-45)
- DH 124 Pharmacology For Dental Hygiene** 2 Sem Hrs  
Prerequisites: DH 120, 121, 122, 123, 123L and 125 each with a "C" (2.0) minimum grade. Provides introduction to drugs and anesthetic agents commonly used in the dental practice. Includes origin, physical and chemical properties, methods of administration, and biological effects on the various body systems. (30-0)
- DH 125 Clinical Dental Hygiene I** 4 Sem Hrs  
Prerequisites: DH 110, 111, 112, 114, 115, 116, and 118 each with a "C" (2.0) minimum grade. Provides the opportunity to implement basic treatment skills with clinic patients. (0-120)
- DH 131 Dental Hygiene Seminar II** 1 Sem Hr  
Prerequisites: DH 120, 121, 122, 123, 123L and 125 each with a "C" (2.0) minimum grade. Emphasizes the study of techniques and philosophies of treating patients with special needs. (15-0)
- DH 135 Clinical Dental Hygiene II** 3 Sem Hrs  
Prerequisites: DH 120, 121, 122, 123, 123L, and 125 each with a "C" (2.0) minimum grade. Provides the opportunity to practice and increase the students proficiency skill levels learned from previous Dental Hygiene courses. (0-90)
- DH 210 Periodontics II** 2 Sem Hrs  
Prerequisites: DH 124, 131, and 135 each with a "C" (2.0) minimum grade. Provides the opportunity for assessment, documentation and treatment of the periodontal patient and to demonstrate ultrasonic scaling, root planing and irrigation. (15-45)
- DH 213 Oral Pathology** 3 Sem Hrs  
Prerequisites: DH 124, 131, and 135 each with a "C" (2.0) minimum grade. Introduces the process, identification, and classification of oral diseases. Emphasizes the prevention of the diseases with the scope of responsibility and practice of the dental hygienist. (45-0)
- DH 214 Dental Materials** 4 Sem Hrs  
Prerequisites: DH 124, 131, and 135 each with a "C" (2.0) minimum grade. Presents theory and clinical application related to properties and manipulation of dental materials and devices used in dental procedures. (45-45)
- DH 215 Clinical Dental Hygiene III** 6 Sem Hrs  
Prerequisites: DH 124, 131, and 135 each with a "C" (2.0) minimum grade. Provides the opportunity to practice and increase the students' proficiency skill levels of advanced instruments from previous Dental Hygiene courses. (0-180)
- DH 216 Community Dentistry I** 2 Sem Hrs  
Prerequisites: DH 124, 131, and 135 each with a "C" (2.0) minimum grade. Provides theoretical base for assessing, designing, implementing, and evaluating dental health improvement programs. (30-0)

**DH 220 Introduction to Orthodontics** 2 Sem Hrs  
Prerequisites: DH 210, 213, 214, 215, and 216, each with a "C" (2.0) minimum grade. Introduces the dental hygienist to the concepts of preventive and interceptive techniques in the treatment of disharmonies in dental occlusion. Includes Myofunctional Therapy and the application of orthodontic appliances. (15-45)

**DH 222 Case Study Documentation** 1 Sem Hr  
Prerequisites: DH 210, 213, 214, 215, and 216, each with a "C" (2.0) minimum grade. Provides opportunity to present specific case documentation on dental patients' conditions. (15-0)

**DH 225 Clinical Dental Hygiene IV** 6 Sem Hrs  
Prerequisites: DH 210, 213, 214, 215, and 216, each with a "C" (2.0) minimum grade. Provides the opportunity to perfect skills learned in all previous dental hygiene courses. Includes exposure to nontraditional instruments. (0-180)

**DH 227 Community Dentistry II** 1 Sem Hr  
Prerequisites: DH 210, 213, 214, 215, and 216, each with a "C" (2.0) minimum grade. Provides opportunity for assessment of dental health needs for target populations. Includes design, implementation, and evaluation of dental health improvement programs in non-traditional settings. Evening, weekend, and holiday assignments may be required. (0-45)

**DH 228 Dental Hygiene Seminar III** 1 Sem Hr  
Prerequisites: DH 210, 213, 214, 215, and 216, each with a "C" (2.0) minimum grade. Provides theory and techniques of treating patients with chemical dependencies and special needs. Includes the coordination of treatment phases of the AIDS patient. (15-0)

#### DH 290-299 Special Projects in Dental Hygiene

### DIAGNOSTIC MEDICAL SONOGRAPHY COURSES

**DMS 101 Introduction to Sonography** 2 Sem Hrs  
Prerequisite: Admission to the DMS program. Concurrent enrollment in DMS 103, DMS 104, DMS 105, and DMS 106. Introduces the student to various aspects of sonography and health care including terminology, legal and ethical issues, patient care, film presentation, imaging modalities, and human reproduction and embryology. (30-0)

**DMS 103 Introduction to Abdominal Sonography** 3 Sem Hrs  
Prerequisite: Admission to the DMS program. Concurrent enrollment in DMS 101 DMS 104, DMS 105, and DMS 106. Studies basic anatomy and physiology relating to abdominal sonography. Teaches proper scanning techniques and protocols for identifying normal and abnormal sonographic patterns. Discusses clinical signs and symptoms, along with interpretation of clinical lab tests. (45-0)

**DMS 104 Introduction to OB/GYN Sonography** 2 Sem Hrs  
Prerequisite: Admission to the DMS program. Concurrent enrollment in DMS 101, DMS 103, DMS 105, and DMS 106. Discusses various aspects of OB/GYN sonography. Studies normal sectional anatomy and development, fetal assessment, normal and abnormal sonographic patterns, along with techniques and protocols. (30-0)

**DMS 105 Ultrasound Physics and Instrumentation I** 2 Sem Hrs  
Prerequisite: Admission to the DMS program. Concurrent enrollment in DMS 101, DMS 103, DMS 104, and DMS 106. Introduces the student to basic acoustic physics including a history of instrumentation, ultrasonic propagation principles, transducer parameters, and basic equipment types. (30-0)

**DMS 106 Ultrasound Scanning** 4 Sem Hrs  
Prerequisite: Admission to DMS program. Concurrent enrollment in DMS 101, DMS 103, DMS 104, and DMS 105. Provides hands on experience in sonographic imaging. Teaches basic operations of the ultrasound machine along with transducer orientation. Includes an overview of abdominal and pelvis imaging, scan plane recognition, and basic imaging concepts. (60-0)



**DMS 112 Small Parts Sonography 1 Sem Hr**

Prerequisites: DMS 101, DMS 103, DMS 104, DMS 105, and DMS 106. Concurrent enrollment in DMS 113, DMS 114, DMS 115, DMS 116, and DMS 117. Covers the fundamentals of superficial parts sonography. Presents basic small parts anatomy, as well as proper scanning techniques and protocols for identifying normal and abnormal sonographic patterns. (15-0)

**DMS 113 Advanced Abdominal Sonography 1 Sem Hr**

Prerequisites: DMS 101, DMS 103, DMS 104, DMS 105, and DMS 106. Concurrent enrollment in DMS 112, DMS 114, DMS 115, DMS 116, and DMS 117. Presents pathology and disease processes, normal and abnormal sonographic patterns, clinical correlation, and differential diagnosis of the abdominal cavity. (15-0)

**DMS 114 Advanced OB/GYN Sonography 2 Sem Hrs**

Prerequisites: DMS 101, DMS 103, DMS 104, DMS 105, and DMS 106. Concurrent enrollment in DMS 112, DMS 113, DMS 115, DMS 116, and DMS 117. Presents pathology and disease processes, normal and abnormal sonographic patterns, clinical correlation, and differential diagnosis of the obstetrical and gynecologic patient. (30-0)

**DMS 115 Ultrasound Physics and Instrumentation II 2 Sem Hrs**

Prerequisites: DMS 101, DMS 103, DMS 104, DMS 105, and DMS 106. Concurrent enrollment in DMS 112, DMS 113, DMS 114, DMS 116, and DMS 117. Presents the fundamentals of doppler ultrasound, scanning artifacts, quality assurance, and biologic effects, and safety. Includes an overview of the components of an ultrasound system. (30-0)

**DMS 116 Clinical Seminar I .5 Sem Hr**

Prerequisites: DMS 101, DMS 103, DMS 104, DMS 105, and DMS 106. Concurrent enrollment in DMS 112, DMS 113, DMS 114, DMS 115, and DMS 117. Provides a clinical overview of sonographic procedures of the abdomen, pelvis, fetus, and small parts. Emphasizes identification of normal anatomy and basic pathology. (7.5-0)

**DMS 117 Clinical Education I 5 Sem Hrs**

Prerequisites: DMS 101, DMS 103, DMS 104, DMS 105, and DMS 106. Concurrent enrollment in DMS 112, DMS 113, DMS 114, DMS 115, and DMS 116. Provides structured clinical experience necessary to perform sonographic procedures of the abdomen, pelvis, fetus, and small parts. (0-440)

**DMS 201 Introduction to Neurologic and Vascular Sonography 3 Sem Hrs**

Prerequisites: DMS 112, DMS 113, DMS 114, DMS 115, DMS 116, and DMS 117. Concurrent enrollment in DMS 202, DMS 206, and DMS 207. Provides an overview of sonographic imaging of the neonatal and infant brain. Includes normal and abnormal anatomy and sonographic patterns. Looks at basic vascular ultrasound with emphasis on normal anatomy, imaging techniques, and basic pathology. (45-0)

**DMS 202 Ultrasound Seminar I 4 Sem Hrs**

Prerequisites: DMS 112, DMS 113, DMS 114, DMS 115, DMS 116, and DMS 117. Concurrent enrollment in DMS 201, DMS 206, and DMS 207. Presents basic techniques and protocols for invasive and intraoperative sonography. Looks at advanced sonographic imaging procedures, new advances in the field of sonography, and the fundamental elements for maintaining an ultrasound department. (60-0)

**DMS 206 Clinical Seminar II .5 Sem Hr**

Prerequisites: DMS 112, DMS 113, DMS 114, DMS 115, DMS 116, and DMS 117. Concurrent enrollment in DMS 201, DMS 202, and DMS 206. Provides a clinical overview of sonographic procedures of the abdomen, pelvis, fetus, and superficial parts. Emphasizes identification of pathology, recognition of disease processes, sonographic differentials, and clinical correlation. (7.5-0)

**DMS 207 Clinical Education II 5 Sem Hrs**

Prerequisites: DMS 112, DMS 113, DMS 114, DMS 115, DMS 116, and DMS 117. Concurrent enrollment in DMS 201, DMS 202, and DMS 206. Provides structured clinical experience necessary to perform sonographic procedures of the abdomen, pelvis, fetus, small parts, and vascular system. (0-440)

**DMS 212 Ultrasound Seminar II 4 Sem Hrs**

Prerequisites: DMS 201, DMS 202, DMS 206, and DMS 207. Concurrent enrollment in DMS 217. Discusses all aspects of sonographic imaging including scanning techniques and protocols, normal and abnormal sonographic patterns, pathologic and disease processes, and differential diagnosis. Includes preparation for the ARDMS certifying examinations. (60-0)

**DMS 217 Clinical Education III 5 Sem Hrs**

Prerequisites: DMS 201, DMS 202, DMS 206, and DMS 207. Concurrent enrollment in DMS 212. Provides structured clinical experience necessary to perform sonographic procedures of the abdomen, pelvis, fetus, small parts, and vascular system. (0-440)

**DMS 290-299 Special Projects in Diagnostic Medical Sonography****DRAFTING COURSES****DRF 104 Basic Mechanical Design 4 Sem Hrs**

Developed for students with no drafting experience, less than one year of high school mechanical drafting, or for students with less than a "C" (2.0) grade in mechanical drafting. Provides instruction and practice to develop skill in spatial visualization, sketching, multiview instrument drawing, section views, design concept presentation, pictorial drawing, and American National Standards Institute (ANSI) conventional drafting and dimensioning standards. Credit may be earned in DRF 104 or DRF 105 but not in both. (15-105)

**DRF 105 Beginning Mechanical Design 3 Sem Hrs**

Provides instruction and practice to develop skill in spatial visualization, sketching, multiview instrument drawing, section views, design concept presentation, pictorial drawing, and American National Standards Institute (ANSI) conventional drafting and dimensioning standards. Credit may be earned in DRF 104 or DRF 105 but not both. (15-75)

**DRF 107 Intermediate Mechanical Design 3 Sem Hrs**

Prerequisite: DRF 104 or 105, and CAD 114. Applies computer-aided and manual methods to the mechanical design process using single and multi-view dimensioning, tolerancing, limit dimensions, thread representation and symbols, orthographic projection, auxiliary views, revolution views, design specifications, working drawings, and vectors for analysis. (30-30)

**DRF 120 Beginning Industrial Blueprint Reading 2 Sem Hrs**

Course designed for machine operators, welders, or assemblers with little or no blueprint reading experience. Includes manipulation of basic fractions and decimals and as applied to the reading of blueprints, reading measuring instruments, basic geometric figures, drafting and blueprinting procedures, basic orthographic projection auxiliary and sectional views, detail and assembly drawings, dimensioning and tolerances, title block, change block, list of materials, and notes. Credit may be earned in DRF 120 or WELD 120 but not both. (30-0)

**DRF 122 Blueprint Reading for Welders and Fabricators 2 Sem Hrs**

Prerequisite: DRF 120 or basic knowledge of blueprint reading. Course designed specifically for welders and fabricators working with welding drawings. A more in-depth treatment of basic blueprint information, orthographic projection, assembly drawings, and geometric tolerancing. Emphasis placed on welding symbols and welding drawings. Credit may be earned in DRF 122 or WELD 122 but not both. (30-0)

**DRF 124 Blueprint Reading for Machine Tool Operators 2 Sem Hrs**

Prerequisite: DRF 120. Instructs machinists, lathe operators, mill operators, and grinder operators in more in-depth treatment of working drawings, supplementary views and information, materials and processes commonly found in machining drawings. (30-0)

**DRF 128 Geometric Tolerancing 2 Sem Hrs**

Prerequisite: DRF 120 or permission of instructor. Primary emphasis is on geometric symbols used in place of written notes on industrial drawings including datum, symbols, and other items tolerancing to the geometry of the part. Credit may be earned in either DRF 128 or SKDR 128 but not both. (30-0)



**DRF 129 Advanced Geometric Tolerancing 2 Sem Hrs**  
Prerequisite: DRF 128. A continuation of DRF 128, with a more in-depth study of positional tolerance, datums, form tolerance, gaging and verifying principles with advanced applications. (30-0)

**DRF 256 Descriptive Geometry 3 Sem Hrs**  
Prerequisites: MTH 103 or MT 110, and DRF 107. Emphasizes space visualization and processes of solution. Problems comprise: combinations of points, lines, planes, intersections, developments, warped surfaces, true angles, true size and shape, vectors, shades and shadow, and conics. (15-75)

**DRF 257 Advanced Mechanical Design 4 Sem Hrs**  
Prerequisites: DRF 107, DRF 128, MS 113 or permission of instructor. Focuses on individual and/or team assignments working from complex design layouts to presentation of complete sets of working drawings, including product design, piping design, welding design, and plant layout. Emphasizes the CAD/CAE system, the design process, engineering references, and use of supplier catalogs. (30-90)

**DRF 290-299 Special Projects in Drafting**

## ECONOMICS COURSES

**ECN 221 Principles of Economics I 4 Sem Hrs**  
The study of how the American economics system works to produce and distribute goods and services given limited resources. The following topics are covered: Supply and demand analysis; Inflation, unemployment and grow national product; The activities and impact of the consumer, business and government on the economy; interest rates, money and banking; and the business cycle. Credit may be earned in either ECN 111 or 221 but not both. (60-0)

**ECN 222 Principles of Economics II 4 Sem Hrs**  
Prerequisite: ECN 221. A continuation of ECN 221 with emphasis on the individual units in the economy. The following topics are covered: further study of supply and demand; business behavior based on industry structure; regulated business (utilities); international trade and finance; and selected current problems. (60-0)

**ECN 268 International Studies in Economics 1-4 Sem Hrs**  
An analysis of foreign economic systems, including the private-public mix, role of international trade, foreign solutions to common economic problems, and specific timely topics. Includes classroom lectures, individual consultation and international field of study. Expenses for field study must be borne by the student. By prior arrangement with appropriate faculty, students may also take International Studies in the following disciplines: GEO 268, MGT 268 (or former GB 268), SOC 268. (60-0)

**ECN 290-200 Special Projects in Economics**

## EDUCATION COURSES

**ED 200A Exploratory Teaching (Elementary) 3 Sem Hrs**  
Prerequisites: ENG 111 & 112 with minimum of "C" (2.0); minimum of 24 credits with 2.0 gpa; minimum 2 courses from the following with at least a C+ in each: ART 105, ART 113, ED 101, LIT 251, MTH 110, MUS 100, LWT 266, PSY 223. Provides aspiring elementary teachers with experience, study and discussion to enable them to make informed career decisions. Requires at least 90 hours of field work in an elementary school, plus at least 15 hours of seminar. Credit may be earned in ED 200A or ED 200B, but not in both. (15-90)

**ED 200B Exploratory Teaching (Secondary) 3 Sem Hrs**  
Prerequisite: ENG 111 & 112 with a minimum of "C" (2.0); minimum of 24 credits with 2.0 gpa; minimum 2 courses in teaching major or minor with at least C+ in each. Provides aspiring secondary teachers with experience, study and discussion to enable them to make informed career decisions. Requires at least 90 hours of field work in a secondary school, plus at least 15 hours of seminar. Credit may be earned in ED 200A or ED 200 B, but not in both. (15-90)

**ED 201 Education of the Exceptional Child 3 Sem Hrs**  
Emphasizes the characteristics indigenous to the exceptional child for present or prospective teachers of the non-typical child. Presents an overview of the educational needs of and approaches to exceptional children to give students an opportunity to study the various programs offered. (45-0)

**ED 268 International Studies In Education 1-4 Sem Hr**  
Involves the study of one or more aspects of the educational system of a country other than the United States including class lectures and individual consultation. Overseas study is an integral part of the course. Expenses for travel and overseas study must be borne by the student. (60-0)

**ED 392 Internet Teaching Techniques for Teachers 3 Sem Hrs**  
Prerequisite: College junior/senior-level education majors, teachers, or the consent of instructor. Provides those with basic Internet skills the tools and knowledge to create strategies and practices that use Internet tools (e-mail, discussion list, WWW, search engines, chat programs) to enhance student learning. (45-0)

**ED 394 Theory and Pedagogy of Learning Communities 2 Sem Hrs**  
Examines (in classroom seminars and by on-line listserv) learning communities theories and models, including concepts of interdisciplinarity and community. Includes participation in on-line listserv interactive journaling about course readings and a capstone project to prepare a syllabus, one or two possible assignments, and at least one means of assessment for a proposed learning community. Designed for faculty, future teachers, and administrators. (30-0)

**ED 397 Introduction to Distance Learning 3 Sem Hrs**  
Prerequisites: College junior/senior-level education or communications majors, teachers or consent of the instructor. Teaches strategies for distance education technology, with particular emphasis on instructional design, two-way interactive television (ITV), for application in any field. (45-0)

**ED 399 Using Classroom Assessment Techniques 2 Sem Hrs**  
Prerequisite: Instructor permission required. Introduces classroom assessment techniques (CAT's) and their use across disciplines. Develops and applies a variety of CAT's to formatively assess different types of learning and student development. Includes investigation and development of CAT's as tools for classroom research. (30-0)

**ED 290-299 Special Projects in Education**

## ELECTRONIC DISTRIBUTION DESIGN COURSES

**EDD 130 Electric Distribution Design I 4 Sem Hrs**  
Prepares an employee with the basic knowledge of electrical distribution equipment and the skills to design and prepare work orders for construction of the basic service facilities through self-study. (72-0)

**EDD 132 Electric Distribution Design II 4 Sem Hrs**  
Prerequisite: EDD 130. Continues the self-study course, Electrical Distribution Design I. Prepares an employee with the basic knowledge of electrical distribution equipment and the skills to design and prepare work orders for construction of electrical distribution facilities. (72-0)

**EDD 290-299 Special Projects in Electronic Distribution Design**



## ELECTRONIC ENGINEERING TECHNOLOGY COURSES

### EET 102 Electrical Measurements and Technology Careers 2 Sem Hrs

Prerequisite: MTH 097. Must be taken concurrently with EET 120. Introduces students to the EET curriculum. Helps students overcome the barriers to success in the technology area. Includes topics covering the importance of fundamental classes, problem solving skills, ethics in the workplace and school, differences in job titles, and learning styles. Assists students to mechanically make electronic measurements and evaluate based on equipment specification the range of data, and to express their findings in written report form. Credit may be earned in EET 102 or EET 100 and EET 131.

### EET 103 Passive Circuits 3.5 Sem Hrs

Prerequisites: EET 102, MTH 113, PHY 111, and ENG 111. Must be taken concurrently with EET 104. Studies DC and AC circuit fundamentals, passive components only, including the theory and application of direct current and alternating current concepts. Covers basic circuit laws, magnetism, impedance concepts, and transient analysis, and electrical and physical definitions. Analyzes component behavior based on physics principles. Credit may be earned in EET 103 and 104 or EET 110. (52.5-0)

### EET 104 Circuit Analysis 3.5 Sem Hrs

Must be taken concurrently with EET 103. Studies DC and AC circuit fundamentals, passive components only, including independent and dependent sources. Involves network analysis of two and three variable problems. Credit may be earned in EET 103 and 104 or EET 110. (52.5-0)

### EET 120 Digital Circuits 3 Sem Hrs

Prerequisite: MTH 097 or H.S. equivalent. Studies fundamental concepts of digital electronics, including the +5 volt TTL family of integrated circuits, digital number systems, Boolean algebra, Karnaugh maps, combinational logic circuits, counters, latches, flip-flops and shift registers. Introduces basic memory concepts and circuits. (30-30)

### EET 208 Active Circuits I with Computer Simulation A 4 Sem Hrs

Prerequisites: EET 103 and EET 104. Must be taken concurrently with EET 209. Studies AC and DC analysis and design of circuitry involving solid state diodes, and bipolar junction transistors. Emphasizes loadlines and computer simulation of the circuits. Credit may be earned in EET 210 and 212 or EET 208 and 209. (60-0)

### EET 209 Active Circuits I with Computer Simulation B 4 Sem Hrs

Must be taken concurrently with EET 208. Presents small signal analysis of AC two-part parameters and design of circuitry involving bipolar junction transistors. Emphasizes loadlines, small-signal AC analysis models, and computer simulation of the circuits. Credit may be earned in EET 210 and 212 or EET 208 and 209. (60-0)

### EET 211 Active Circuits II 5 Sem Hrs

Prerequisite: MTH 211 or 161, and EET 210. Studies linear integrated circuit theory, frequency response and applications. Emphasizes use of operational amplifiers for math operations, comparators, active filters, analog to digital converters, current and voltage-controlled amplifiers, and the use of power boosting techniques. Covers phase locked loops, switching and fixed voltage regulators, integrated timing circuits, and function generators. (60-30)

### EET 215 Electrical Controls and Automation 5 Sem Hrs

Prerequisites: EET 235 or 210. EET 210 can be taken concurrently with instructor permission. Studies industrial control logic design and application with emphasis on ladder logic, relay and T-switch logic formats. Uses Modicon micro 84 to study programmable controller logic. Covers 4-layer semiconductors (SCRS-TRIACS-UJTS-PUTS-DIACS), their characteristics and applications. Studies application of electronic control systems to machine processes with emphasis on transducers, I/O interfaces, control processors and output drivers. (60-30)

### EET 226 Computer Electronics 6 Sem Hrs

Prerequisites: EET 102 and EET 120. Introduces computer electronics with an emphasis on programming microcontroller computers using the "C" programming language. Teaches students to design projects that combine hardware and software to applications that interface microcontrollers to other computers and to analog and digital circuits. (90-0)

### EET 230 Soldering Techniques 1 Sem Hr

Develops skill in soldering and printed circuit board fabrication and repair, using commonly accepted industrial practices. Covers safety, chemical handling, contamination of work area, grounding, materials, and waste handling. Producing a functioning printed circuit assembly is required. (8-22)

### EET 231 Electronic Fabrication 3 Sem Hrs

Teaches basic prototype development from proposal to final report. Includes printed circuit board artwork on PC based CAD. Instructs students in undertaking several class projects as well as proposing a project of their own. Includes instruction in procuring parts, building test, and writing final report that covers the specification, operation, and troubleshooting of the unit. (15-60)

### EET 235 Electrical Circuits 3 Sem Hrs

Prerequisites: MT 220 and PHY 222; MTH 113 or MTH 121. MT 220 may be taken concurrently. Studies DC and AC circuit fundamentals including a general introduction to industrial control concepts. (30-30)

### EET 290-299 Special Projects in Electronic Engineering Technology

## ENGINEERING COURSES

### EGR 100 Careers in Engineering 1 Sem Hr

A study of Engineering as a profession as well as a career. Surveys the various fields such as Mechanical, Electrical, Civil, etc. Compares an engineer with a technologist. Reviews work responsibilities, ethics, the work environment, challenges, salaries. (15-0)

### EGR 101 Engineering Design and Analysis 1 Sem Hr

Applies critical thinking concepts to engineering problem solving strategies. Uses student work teams to solve a problem or develop a design on paper using the engineering design process. Uses research techniques on the Web or library, brainstorming for idea generation, criterion selection, and presents information in an oral and written format. (15-0)

### EGR 165 Introduction to Engineering Graphics 4 Sem Hrs

A study of the graphic language applied to mechanical and civil engineering design. Develops skills in orthographic projection, multi-view drawings, isometric drafting, sectioning, auxiliary views, revolutions, developments, ANSI dimensioning, and tolerancing, annotation and descriptive geometry. Uses computer-aided drafting and analysis. Credit can be earned in EGR 165 or DRF 155 but not in both. (30-60)

### EGR 166 Engineering Graphics 4 Sem Hrs

Prerequisite: One year of high school mechanical drafting with final grade of "C" (2.0) or higher. A study of the graphic language applied to mechanical design, review of multi view and isometric drafting, and the geometry of drawing. Emphasis on developing skills in using orthographic projections, sectional views, auxiliary views and revolutions, dimensioning and annotation, and descriptive geometry. Computer-aided methods in drafting and analysis are used for all topics studied. Students cannot obtain credit for both EGR 165 and EGR 166. (30-60)

### EGR 215 Engineering Mechanics, Statics 3 Sem Hrs

Prerequisites: MTH 261 and PHY 211. (MTH 261 may be taken concurrently). Develops skill in analyzing machine elements and structures, which are in static equilibrium. Using vector calculus, integration and algebra/trig, techniques, forces and moments are solved in 2D and 3D problems. Includes concepts of centroids and moments of inertia. Applied to mechanical linkages, disks and shafts, beams in bending, screw threads, trusses, frames, and vehicles. (45-0)

**EGR 216 Engineering Mechanics: Dynamics** 3 Sem Hrs  
Prerequisite: EGR 215. Aims at students needing a second course in mechanics for engineers. Covers kinematics and kinetics of particles and rigid bodies in 2D and 3D. Uses force/acceleration, energy and momentum methods and applications to machine elements and structures in mechanical engineering. (45-0)

**EGR 290-299 Special Projects in Engineering**

## ELECTRONIC MEDIA COURSES

**EM 285 Electronic Media Capstone** 4 Sem Hrs  
Prerequisites: ART 111, ART 115, ART 151, ART 152, ART 271, ART 273 or 277, ART 279, ART 283; OR BRT 255; OR CST 114, CST 115, CST 210, CST 216 OR permission of instructor. Designs and produces a multi-media package for simulated clients as part of interdisciplinary student teams. Identifies through a team of students the specific multi-media needs of a client, such as web-site design and implementation, video/audio instructional or informational media needs, and print materials. Evaluates on clarity of production design, quality of media generated, and how effectively produced materials meet the needs of the client. (60-30)

**EM 290-299 Special Projects in Electronic Media**

## EMERGENCY MEDICAL TECHNOLOGY COURSES

**EMS 101 Medical First Responder** 4 Sem Hrs  
Provides instruction in basic management of emergency medical/pre-hospital care of the sick and injured. Teaches the necessary information and skills needed to recognize, properly assess, and treat the sick and injured as a First Responder. Provides First Responders with training on how to reach patients, find out what is wrong, provide emergency care, and, when necessary, move patients without causing further injury. (60-0)

**EMS 110 Basic Emergency Medical Technician I** 4 Sem Hrs  
Prerequisites: HSC 105, current certification in CPR for the professional Rescuer and concurrent enrollment in EMS 111 and EMS 113. Provides fundamentals of basic emergency medical services. Includes roles and responsibilities of EMS personnel, basic anatomy and physiology, patient assessment and airway management. Credit may be earned in EMS 110 or EMT 110, but not in both. (48-12)

**EMS 111 Basic Emergency Medical Technician 2** 4 Sem Hrs  
Prerequisite: Successful completion of EMS 110 with a minimum "C" grade and concurrent enrollment in EMS 110 and EMS 113. Provides theory and skills related to management and transport of medical and trauma patients. Includes pharmacology, cardiovascular disease, and obstetrics. Credit may be earned in EMS 111 or EMT 111, but not in both. (45-15)

**EMS 112 Basic Emergency Technician 3** 3 Sem Hrs  
Prerequisite: Successful completion of EMS 111 with a minimum "C" grade. Continues medical emergency topics including rescue and extrication and HAZMAT. Credit may be earned in EMS 112 or EMT 112, but not in both. (30-18)

**EMS 113 Basic EMT Field Experience** 1 Sem Hr  
Prerequisite: Successful completion of EMS 110 with a minimum "C" grade and concurrent enrollment in EMS 110 and EMS 111. Provides the opportunity to observe and assist with basic emergency treatment techniques in emergency service facilities. Credit may be earned in EMS 113 or EMT 102, but not in both. (0-60)

**EMS 290-299 Special Projects in Emergency Medical Technology Courses**

## ENGLISH COURSES

**ENG 090 Introduction to College Reading and Writing** 5 Sem Hrs  
Provides those who are not yet prepared for academic work in the regular composition sequence (ENG 111A, ENG 111, ENG 112) with opportunity to improve their reading and writing skills in an interactive and collaborative setting. Includes practice of personal and academic writing with special attention given to individual needs, which may include organization, sentence structure and variety, correct usage, and vocabulary development. Practices active reading strategies to understand, interpret, and apply information from reading. Successful completion of ENG 090 with a "B" or better is advisable for students prior to enrolling in the regular composition sequence. Credit will not be earned for graduation requirements. (75-0)

**ENG 101 Applied English Skills** 5 Sem Hrs  
Instruction and experience in the skills of reading, writing, and oral communication with emphasis on practical use. This course fulfills the college English requirements for specific technical programs. (75-0)

**ENG 104 Applied Spelling Techniques** 2 Sem Hrs  
Emphasizes English spelling patterns and sequences as well as techniques for approaching spelling for adult learners. Shows students how to apply critical thinking strategies to identify and meet their individual spelling needs. (30-0)

**ENG 105 English as a Second Language** 5 Sem Hrs  
Aids the speaker of English as a second language with intermediate and advanced English language skills to communicating in academic and social settings. Includes speaking, listening, reading, composition, non-verbal communication and American culture. (75-0)

**ENG 107 Elements of Grammar** 2 Sem Hrs  
Acquaints or refreshes students with useful, basic grammatical concepts and options in written language. Includes illustration and practice of sentence structure, usage, and punctuation. Strengthens writing skill and language awareness. (30-0)

**ENG 108 Effective Reading and Vocabulary Development I** 4 Sem Hrs  
Designed for those who need to understand, remember, and enjoy what they read. Course will include techniques for understanding new words from reading and remembering vocabulary. Special consideration will be given to the study-reading process for college-level work. (60-0)

**ENG 109 Effective Reading and Vocabulary Development II** 3 Sem Hrs  
Increases comprehension and flexibility with a variety of printed material, particularly college-level texts. Prepares you to better understand and use reading strategies and vocabulary learning techniques. Expects you to employ these strategies and techniques with a high degree of independence and minimal guidance from instructor. (45-0)

**ENG 111/111H College Composition I** 3 Sem Hrs  
Develops fluent, effective, and confident writers. Practices the process of composing; generating ideas, shaping and evaluating their writing. Uses reading and language awareness to further the development of their writing. (45-0)

**ENG 111A Writing Methods/College Composition I** 5 Sem Hrs  
Of the five credits earned in this course, three will transfer to universities and partially fulfill the college's English composition requirement. Although the other two hours do not transfer, they do provide a solid background necessary, toward success in all college courses. Credit may be earned in Eng 111, 111A or 111H, but not more than one. (75-0)

**ENG 112/112H College Composition II** 3 Sem Hrs  
Prerequisite: ENG 111 or ENG 111A, or ENG 111H. Continues the development of fluent, effective, and confident writers. Expands students' abilities and versatility in reading, language awareness, and composing for a range of purposes, audiences, and situations, including academic research writing. (45-0)



**ENG 112A Writing Methods/College Composition II****5 Sem Hrs**

Prerequisite: ENG 111 or ENG 111A, or ENG 111H. Continues the development of fluent, effective and confident writers. Expands students' abilities and versatility in reading, language awareness, and composing for a range of purposes, audiences, and situations, including academic research writing. Credit may be earned in ENG 112 or 112A, but not in both. (75-0)

**ENG 113 Technical Communication****3 Sem Hrs**

Prerequisite: ENG 111 or ENG 111A or ENG 111H. Covers techniques for presentation of technical material in formal and informal written reports, letters and other current forms of business and technical communication. Emphasizes general principles used for successful written communication experiences in the professional world and the development of thinking and organizational skills, with specific applications to technical courses or professional case studies. (45-0)

**ENG 115 Mass Media****3 Sem Hrs**

Survey books, newspapers, magazines, recordings, film, radio, television, advertising, public relations and electronics. Includes media history operations, products, current issues and criticisms. (45-0)

**ENG 116 News Writing****3 Sem Hrs**

Prerequisite: ENG 115 or permission of instructor. Studies fundamental principles of gathering information and writing basic news stories. Emphasizes the elements of news, the lead, Associate Press style, news sources and structures of news stories. (30-30)

**ENG 195 Library Research Skills****1 Sem Hrs**

Develops the ability to access, analyze, evaluate, use, document, and communicate information from library sources including electronic indexes, the on-line catalog, and introduces Internet. Credit may be earned in LIB 195 or ENG 195, but not in both. (15-0)

**ENG 211 Advanced Composition****3 Sem Hrs**

Prerequisite: ENG 112 or permission of instructor. Continues to practice forms of academic writing such as the summary, report based upon research, and the analytical essay. Emphasizes writing process and examines the origins and purpose of academic discourse. Approaches may include workshop, conferencing, publication and word processing at the discretion of the instructor. (45-0)

**ENG 217 Advanced Reporting****3 Sem Hrs**

Prerequisite: ENG 116. Focuses on advanced journalism techniques and news gathering methods, handling specialized assignments in government, crime, courts, sports, business and education plus editorial columns and entertainment reviews. Class members work on *The Delta Collegiate*. (30-30)

**ENG 218 News Editing****3 Sem Hrs**

Provides training in publication style, including newspapers, magazines, business and trade press, house organs, news letters and specialized publications; news evaluation, copy editing, headline writing, basic typography, design and computerized layout. Class members work on *The Delta Collegiate*. (30-30)

**ENG 253 Creative Writing: Poetry****3 Sem Hrs**

Prerequisite: ENG 112. A course in the writing of poetry. Students are encouraged to develop their own poetry writing skills and understanding. In addition to other classroom activities, there are discussions and writing assignments. The instructor may also choose to require analysis of published poetry and criticism. (45-0)

**ENG 254 Creative Writing: Fiction****3 Sem Hrs**

Prerequisite: ENG 112. Focuses on the writing of prose-chiefly short stories. Encourages students to develop their own writing styles. Includes other classroom activities, discussions and writing assignments, requiring analysis and criticisms of other student's work. (45-0)

**ENG 256 Personal Writing****3 Sem Hrs**

Prerequisite: ENG 112 or permission of instructor. A writing and reading course emphasizing inner exploration as a way of personal growth and expanded awareness. The central focus will be student's journal, although other avenues of personal writing such as dream logs and autobiographies and essays as aids to his/her writing and as works of literary art. (45-0)

**ENG 290-299 Special Projects in English****ENVIRONMENTAL SCIENCE COURSES****ENV 100 Environmental Regulations****3 Sem Hrs**

Presents an overview of the regulations that are related to environmental protection, including OSHA regulations, Clean Air Act, SARA, RCRA and similar regulations. Provides an awareness of why the regulations exist, how they are enforced, penalties for noncompliance, and practical experience in interpretation of the regulations. (Cannot be counted toward Natural Science credit). (45-0)

**ENV 105 Introduction To Environmental Health & Safety****3 Sem Hrs**

Introduces students to the safety requirements and regulations needed to successfully direct a safety program on an industrial site. (45-0)

**ENV 130 Pollution Prevention****1 Sem Hr**

Provides a study of protecting the environment, reducing waste generation, environmental compliance, preventing future liability associated with non-compliance and improper disposal of hazardous wastes, and improving profitability of an operation through pollution prevention techniques and practices. (15-0)

**ENV 151 HAZWOPER Training****2.7 Sem Hrs**

Involves hands-on training in the use of personal protective equipment, monitoring and sampling techniques, and decontamination techniques relative to hazardous materials in the workplace. Emphasizes rationale for following specific procedures, evaluations, relative merits of equipment and materials used. Establishes criteria for evaluation of field experience. Meets requirements of 40-hour HAZWOPER training. May be offered through Delta College Corporate Services or credit by prior experience as reviewed by the Science Division. (Cannot be counted toward Natural Science credit.) (40-0)

**ENV 152 Emergency Response to Industrial Spills****1.6 Sem Hrs**

Provides mandated training (24 hours) for emergency response to industrial spills, including use of protective equipment, sampling techniques, and decontamination methods. May be offered through Delta College Corporate Services or credit by prior experience as reviewed by the Science Division. (Cannot be counted toward Natural Science credit.) (24-0)

**ENV 153 Confined Space Training****1.3 Sem Hrs**

Provides mandatory training (20 hours) required for confined space entry relative to hazardous materials spills and contamination in the industrial sector. Includes protocols, monitoring methods, types and use of protective gear, and communication methods necessary to protect workers in potentially hazardous confined space. May be offered through Delta College Corporate Services or credit by prior experience as reviewed by the Science Division. (Cannot be counted towards Natural Science credit.) (20-0)

**ENV 154 Hazardous Materials Shipping and Handling****.4 Sem Hrs**

Provides training pertinent to the mandatory protocols for the shipping and handling of hazardous materials, including packaging, labeling documentation, and placarding. May be offered through Delta College Corporate Services or credit by prior experience as reviewed by the Science Division. (Cannot be counted towards Natural Science credit.) (6-0)

**ENV 290-299 Special Projects in Environmental Science****ENV 310 Environmental Site Assessments****3 Sem Hrs**

Provides overview of standard methods for assessing recognized environmental conditions affecting commercial real estate. Covers standard procedures that aid in the environmental assessment of properties for potential legal and economic impacts of pre-existing environmental conditions. Includes legal responsibilities, financial penalties, safe working conditions, and legally accepted standard procedures for environmental site assessment. Emphasizes ASTM Phase I & II including analysis of case studies. Includes participation in an environmental site assessment. (45-0)



**ENV 320 Environmental Management Systems 3 Sem Hrs**  
Provides a systematic method of assessing an organization's environmental aspects that protect the environment and the organization from fines and other regulatory penalties. Identifies and addresses environmental issues through standardized environmental management systems. Focuses on ISO 14000 environmental management standards. (45-0)

## FRENCH COURSES

**FR 105 Conversational French—Introduction 2 Sem Hrs**  
Designed to emphasize the acquisition of oral skills. Successful completion of FR105 and FR106 is considered equivalent to the successful completion of French One. (30-0)

**FR 106 Conversational French—Continuation 2 Sem Hrs**  
Prerequisite: FR 105 or equivalent. A continuation of FR 105 with more emphasis on reading and writing French. Successful completion of FR 105 and 106 is considered equivalent to the successful completion of French One. (30-0)

**FR 111 French One 4 Sem Hrs**  
A beginning course presenting the basic structure of the French language with drills for correct pronunciation and grammar usage. Emphasis is placed on understanding and using spoken as well as written French. Supplemental work with cassette tapes is expected. (60-0)

**FR 112 French Two 4 Sem Hrs**  
Prerequisite: FR 111 or one year of high school French. A continuation of FR 111 with further development of oral and written skills. (60-0)

**FR 211 French Three 4 Sem Hrs**  
Prerequisite: FR 112 or two years of high school French. Continued application of principles of French grammar by means of conversation and composition practice. Classes conducted as much as possible in French. (60-0)

**FR 212 French Four 4 Sem Hrs**  
Prerequisite: FR 211 or three years of high school French. A continuation of FR 211, with further development of oral and written skills. (60-0)

**FR 290-299 Special Projects in French**

## FIRE SCIENCE TECHNOLOGY COURSES

**FST 101 Introduction to the Fire Service 3 Sem Hrs**  
The student will analyze national fire problems, examine fire prevention procedures, identify fire fighters equipment, interpret fire codes and standards, recognize transportation hazards, study wild-fire methods, work with outside fire agencies, identify citizen responsibility, and study future fire problems. (45-0)

**FST 102 Fireground Tactics 3 Sem Hrs**  
Prerequisite: FST 101 or FST 112. Analysis of basic rules of fire fighting strategy, defining engine company responsibilities, determining ladder company functions, correlating mutual aid fires, and general fire problems will be included. (45-0)

**FST 103 Building Construction 3 Sem Hrs**  
Provides a comprehensive look at the methods and practices employed in residential construction as it pertains to fire science. Structural design, blueprints, building materials, and mechanical considerations are covered. (45-0)

**FST 104 Arson Awareness 3 Sem Hrs**  
A comprehensive study of national, state and local arson problems. Examines the local fire department role in reducing arson related fire losses. Examines the duties of and assistance provided by governmental agencies and the private sector. Analyzes local fire statistics to enable the development of an arson data system. Develops effective arson mitigation strategies. (45-0)

**FST 105 Hazardous Materials/Emergency Responder 3 Sem Hrs**  
A comprehensive study of the physical, chemical, and toxicological characteristics of hazardous materials needed to safely and productively address emergency situations that can occur with these substances. (45-0)

**FST 107 Fire Protection Systems I 3 Sem Hrs**  
A comprehensive study of fire protection systems in buildings. Include design, blueprints, inspection and maintenance of automatic sprinkler systems, standpipe systems, special automatic extinguishing systems, smoke control systems, automatic and manual fire alarm systems, rated fire assemblies and other protection found in structures that help retard the propagation of fire. (45-0) 0

**FST 111 Fire Fighter IA 6 Sem Hrs**  
FST 111 and FST 112 must be taken together. Prepares a participant to test for MFFTC certification as Fire Fighter I based on the Michigan Fire Fighters Training Council IFSTA curriculum. Contains an in-depth menu of information and exercises that meet the National Fire Protection Association (NFPA) 1001 standard. (90-0)

**FST 112 Fire Fighter IB 6 Sem Hrs**  
FST 111 and FST 112 must be taken together. Continues to investigate the Michigan Fire Fighters Training Council IFSTA curriculum and prepares a participant to test for MFFTC certification as Fire Fighter I. Contains an in-depth menu of information and exercises that meet the National Fire Protection Association (NFPA) 1001 standard. (90-0)

**FST 114 Firefighter Safety and Survival .8 Sem Hr**  
Increases awareness of seriousness of firefighter injury/death problem; identifies firefighter responsibility for reducing injuries and deaths, and provides information to improve safety considerations through all aspects of a company officer's job. (12-0)

**FST 115 Managing Company Tactical Operations: Preparing (MCTO:P) .8 Sem Hr**  
Provides basic foundation for management of one or more companies operating at a structural fire emergency. Focuses on basic concepts: Roles and Responsibility, Readiness, Communication, Building Construction. Fire Behavior and Pre-incident Preparation. (12-0)

**FST 116 Building Construction Principles .8 Sem Hr**  
Improves student's ability to assess building stability and resistance to fire through an understanding of principles in construction type, alterations, design, and materials that influence a building's reaction to fire. (12-0)

**FST 117 Managing Company Tactical Operations: Decision Making (MCTO:D) .8 Sem Hr**  
Prerequisite: FST 115. Prepares Fire Officers and Crew Leaders for appropriate response, decision making and tactical operations of one or more companies in structural fire fighting. (12-0)

**FST 118 Records and Reports .4 Sem Hr**  
Introduces various records and reports the fire officer will encounter; describes and demonstrates selected standard procedures in compiling information and exposes student to methods of writing and presenting reports. (6-0)

**FST 120 Fire Service Educational Methodology 1 Sem Hr**  
Develops skill in preparing instructional objectives, designing effective lesson plans, developing evaluation instruments, and creating state-of-the-art media. (15-0)

**FST 133 Computer Aided Management Emergency Operations 3 Sem Hrs**  
Emphasizes the use of Computer Aided Management of Emergency Operations (CAMEO), Areal Locations Of Hazardous Atmosphere (ALOHA), and Mapping Applications for Response and Planning of Local Operational tasks (MARPLOT) software. Provides a tool to response teams and first responders to manage emergency planning and response and regulatory compliance of hazardous material incidents. (45-0)



- FST 202 Company Fire Officer I 5 Sem Hrs**  
Presents "real world contemporary issues" that pose a challenge to supervisory leadership skills of the first line officer. Involves administrative and operational issues at the company/organizational level. Stimulates critical and creative thought process toward what we should be doing versus what we are actually doing as company officers. (60-15)
- FST 203 Fireground Management 3 Sem Hrs**  
Prerequisite: FST 102 or FST 112. A comprehensive study of the roles of the Fireground commander including positioning the command post, equipment, and personnel on the scene, strategies for staging and sectoring operations along with command procedures and maintaining communications on the Fireground. (45-0) (Every other year)
- FST 204 Fire Service Instructional Methodology 3 Sem Hrs**  
The student will have an opportunity to learn how to effectively organize and teach a lesson or course following the criteria in NFPA's Fire Service Instructional Professional Qualifications Level I (1976). (45-0) (Every other year)
- FST 205 Hazardous Materials/Emergency Operations 3 Sem Hrs**  
Prerequisite: FST 105. A comprehensive study of chemical transportation containers, emergency response equipment, and emergency response procedures needed to safely and productively address emergency situations that can occur with hazardous materials. (45-0)
- FST 206 Confined Space Management & Rescue 4 Sem Hrs**  
Provides participants with the knowledge and skills to minimize or eliminate hazards associated with entry into a permit requires confined space. Focuses on OSHA 29 CFR 1910.146 and Michigan Department of Commerce and Industrial Services 325.3001 standards regulation the roles of entry supervisor, entrant, attendant and rescuer. Includes non-permit confined spaces hazards and entry conditions. Includes a hands-on entry and rescue simulation workshop. (45-15)
- FST 207 Fire Protection Systems II 3 Sem Hrs**  
Prerequisite: FST 107. A comprehensive study of fire protection system in buildings. Includes design standards, conducting plan review, inspection, testing and maintenance of fire alarms, automatic detection devices, manual devices, automatic sprinklers, foam-water, water spray, standpipe, water supply and automatic chemical agent systems. (45-0)
- FST 208 Company Fire Officer II 3 Sem Hrs**  
Prerequisite: FST 202. Focuses on highly specialized and complex technical issues the company officer must confront. Presents the inner workings and dynamics of a typical fire service organization. Involves decision making matrix process that embraces administrative functions and strategic planning of a mid-level company officer. Prepares the company officer in the management of multi-unit response operations; water supply, staging, safety, division/sectors exposure protection and unified command functions. (45-0)
- FST 211 Fire Fighter II 4 Sem Hrs**  
Prerequisite: FST111 & FST 112. Prepares a participant to test for MFFTC certification as Fire Fighter II based on the Michigan Fire Fighters Training Council IFSTA curriculum. Contains an advanced in-depth menu of information and exercises that meet the National Fire Protection Association (NFPA) 1001 standard. (60-0)
- FST 213 Managing Company Tactical Operations: Tactics (MCTO:T) .8 Sem Hr**  
Prerequisite: FST 117. Examines rescue and ventilation, confinement and extinguishment, water supply, exposures and defensive operations, and salvage, overhaul, and support. Concludes with a major fire simulation activity. (12-0)
- FST 214 Arson Detection for the First Responder .8 Sem Hr**  
Provides clear definition of the role of initial responder organizations, and essential knowledge to enable them to recognize the potential of an intentionally set fire, preserve evidence, and properly report the information to appropriate officials. (12-0)
- FST 215 Introduction to Fire Inspection Principles and Practices (IFIPP) 2 Sem Hr**  
Advances professional development of fire service personnel in conducting fire prevention inspections and the rapid changes in the field of fire prevention technology. Includes code enforcement, inspection techniques, common and special hazards, behavior of fire, building construction, fire protection systems and life safety features. (30-0)
- FST 216 Building Construction Non-Combustible/Fire Resistive .8 Sem Hr**  
Improves ability of students to assess building stability and resistance to fire while improving operational effectiveness. Includes structural material, principles of fire growth, smoke movement and special problems. (12-0)
- FST 217 Fire Service Supervision: Personal Effectiveness .8 Sem Hr**  
Presents current research on management, leadership, stress, and time management and shows how to adapt information presented to personal specific management context. (12-0)
- FST 218 Fire Service Supervision: Team Effectiveness .8 Sem Hr**  
Demonstrates how communication, motivation, counseling, and the principles of conflict resolution and group dynamics may be used to promote efficient group functioning and member satisfaction. (12-0)
- FST 224 Fire Investigation 3 Sem Hrs**  
An in-depth basic course which defines successful methods for conducting fire investigations. Specific topics include basic chemistry of fire, point of origin and fire cause, both accidental and incendiary, motivation of the fire setter, fire scene investigation, evidence collection, photography, follow-up investigation and court presentation. (45-0)
- FST 230 Fire Safety Education 3 Sem Hrs**  
A comprehensive study of national state and local fire safety education program strategies. Implementation of the five-step planning process at the local level. Development of skills necessary to organize, plan and use sound management of financial, material, and human resources to reach designated goals and objectives, to address the demonstrated fire safety education needs of the local community. (45-0) (Every other year)
- FST 231 Fire Service Law 3 Sem Hrs**  
Basic introduction to the legal considerations that can affect the professional lives of members of the fire service, fire service-related occupations, and those who aspire to careers in the fire service. (45-0) (Every other year)
- FST 240 Internship in Fire Science 2 Sem Hrs**  
Prerequisite: Minimum 15 credits in Fire Science courses and faculty permission. Provides the opportunity to observe and practice technical applications in the field. (0-100)
- FST 290-299 Special Projects in Fire Science Technology**
- FST 300 Fire Officer III 3 Sem Hrs**  
Provides basic leadership skills for personal, company and supervisory success. Includes health and safety risk management, program implementation, and incident management system. (45-0)
- FST 301 Incident Command System 1 Sem Hr**  
Focuses on the fire officer's and manager's responsibilities to use, deploy, implement, and/or function within a department Incident Command System. (15-0)
- FST 302 Leadership I Strategies for Company Success 1 Sem Hr**  
Presents the student with the basic leadership skills and tools needed to perform effectively in the fire service environment. Includes techniques and approaches to problem solving ways to identify and assess the needs of the company officer's subordinates, methods for running meetings effectively, and decision-making skills. (15-0)



**FST 303 Leadership II Strategies for Personal Success 1 Sem Hr**

Provides the student with the basic leadership skills and tools needed to perform effectively in the fire service environment. Includes ethics, use and abuse of power, creativity, and management of the multiple roles of a leader. (15-0)

**FST 304 Leadership III Strategies for Supervisory Success 1 Sem Hr**

Provides the student with the various leadership skills and tools to perform effectively in the fire service environment. Includes delegation to subordinates, assessment of personal leadership styles through situational leadership, discipline, coaching and motivating techniques. (15-0)

**FST 305 Firefighter Health and Safety: Program Implementation & Management 1 Sem Hr**

Focuses on the problem of firefighter health and safety, and the design and implementation of a departmental safety program. Includes command issues, policies, and programs addressing health and safety in emergency situations. (15-0)

**FST 306 Shaping the Future 1 Sem Hr**

Focuses on the skills and techniques that a mid-level manager needs to provide leadership and direction in the fire service. Includes discussions on the use of environmental scanning as a tool, the concepts of paradigm shifts, and methods to reframe problems accurately. (15-0)

**FST 307 Incident Safety Officer 1 Sem Hr**

Focuses on the increasing awareness to a wide variety of emergency situations. Teaches what a safety officer at an incident needs to know using scenarios to convey instructional points. (15-0)

**FST 308 Health and Safety Officer 1 Sem Hr**

Examines the role of the Health and Safety Officer in policy and procedure issues that effect the health and safety of emergency responders; emphasizes risk analysis, wellness, program management, and other occupational safety issues. (15-0)

**FST 332 Advanced Fire Administration 3 Sem Hrs**

Examines the organization and management of the fire service. Discusses new technologies, deployment of resources available, personnel and equipment costs, municipal fire protection planning, statistics and reporting systems, training and finances. (45-0)

**FST 334 Fire Prevention Organization & Management 4 Sem Hrs**

Presents an overview of history, philosophy, techniques, procedures, programs of private and public agencies involved with fire prevention, organization and administration of code enforcement, licenses, permits, zoning, inspections, investigations, education and analysis of statistics. Includes off site field trips. (45-15)

**FST 338 Contemporary Issues In The Fire Service 3 Sem Hrs**

Examines issues having impact on the fire service to include past, present and future concerns and trends. Discusses current political, policies, practices, deployment and events within the fire service and related professions and technologies. (45-0)

**GENERAL BUSINESS COURSES  
(SEE MANAGEMENT)**

**GERMAN COURSES**

**GE 111 German One 4 Sem Hrs**  
Acquisition of proper pronunciation, basic grammatical structures and vocabulary of modern spoken and written German by means of oral practice, reading or simple texts, and written exercises. (60-0)

**GE 112 German Two 4 Sem Hrs**  
Prerequisite: GE 111 or one year of high school German. A continuation of GE 111. (60-0)

**GE 211 German Three 4 Sem Hrs**

Prerequisites: GE 111 and GE 112. Applies the important grammar rules that have been used and practiced in German One and German Two. Reviews in depth the context of conversation exercises, reading excerpts of contemporary original literacy and journalistic pieces. Exposes students to the living spoken and written language to develop a feeling for the language, which is quite necessary for such a complicated language as German. (60-0)

**GE 212 German Four 4 Sem Hrs**

Prerequisites: GE 111, GE 112 and GE 211. Applies the important grammar rules that have been used and practiced in German One, Two, and Three. Reviews in depth the context of conversation exercises, reading excerpts of contemporary original literacy and journalistic pieces. Provides exposure to the living, spoken and written language to develop a feeling for the language. (60-0)

**GE 290-299 Special Projects in German**

**GEOGRAPHY COURSES**

**GEO 103 Introduction to Meteorology 4 Sem Hrs**

Provides study of the fundamentals of weather including the underlying physical processes of the atmosphere, general circulation, weather patterns, and severe weather events. Develops an understanding of weather map analysis and forecasting. Uses extensive laboratory applications related to atmosphere study including graphing, drawing, isopleths, data analysis, and access to real-time weather information. (45-30)

**GEO 105 Human Geography 4 Sem Hrs**

Study focuses on the aspect of geography concerned with "man's" utilization of an impact upon the natural environment. Included are population distribution and growth, settlement forms, utilization and conservation of natural resources, the impact of technology on human occupancy of the earth, man's role in modifying the earth's surface and the origin and spread of cultural elements. (60-0)

**GEO 111 Physical Geography 4 Sem Hrs**

Study of the natural environment which is important to people and their activities; introduction to maps and physical features; earth-sun-moon relationships; earth materials, land forms; drainage; and major natural resources. Introduction to weather and climate, soils and vegetation — their character, causes, significance and distribution. (45-30)

**GEO 113 World Cultural Geography 4 Sem Hrs**

Essential geographic characteristics and concepts of selected cultural regions of the world. These regions will be compared and contrasted in terms of their present and potential development. Examples will be selected from both the western and non-western world. (60-0)

**GEO 116 Professional Global Awareness 1 Sem Hr**

Heightens awareness of cross-cultural understandings. Develops strategies in building business relationships in the global market. (15-0)

**GEO 222 Geography of Asia 3 Sem Hrs**

Regional geographic interpretation of the area as a continent. Study of relationships of physical, economic, social and political environment activity. (45-0)

**GEO 223 Geography of Europe 3 Sem Hrs**

Similar to Geography 222 but applied to Europe. (45-0)

**GEO 226 Geography of United States and Canada 3 Sem Hrs**

Similar to Geography 222 but applied to the United States and Canada. (45-0)

**GEO 255 Third World Development 4 Sem Hrs**

An interdisciplinary description and analysis of processes and conditions which created and maintain the "Third World." Population, physical environment, historical, political, social and economic factors will be addressed. Current concepts and development theories will be explored and applied. Credit may be earned in GEO 265 or SOC 265 but not in both. (60-0)



## GEOGRAPHY COURSES 260 AND ABOVE

These courses usually involve classroom work on the Delta campus followed by a field trip ranging in length from three days to several weeks. Prior to registration, students must make field trip financial arrangements with the instructor.

### **GEO 260 Geography of the Pacific Islands 3 Sem Hrs**

Prerequisite: Permission of the instructor. A regional geographic interpretation of the Pacific Islands emphasizing their physical, environmental and cultural patterns, and their economic development. Study will focus on three subregions: Polynesia, Melanesia and Micronesia. Field work in the Pacific Islands will be required. Students must pay own expenses. (45-0)

### **GEO 261 Geography of Caves & Karst Topography 1 Sem Hr**

Study focuses on the role of solution in forming caves and in landscape formation (karst topography). Formation of stalactites, stalagmites, flowstones and other crystal formations are also studied. Students are required to participate in weekend field trip to Mammoth Cave National Park, Kentucky. Students must pay own expenses. (15-0)

### **GEO 262 The Geography of the Canadian Shield 1 Sem Hr**

Focuses on the interrelationships between humans and the physical environment of this, the largest of the landform provinces of Canada. Major topics include the physical environment, natural resources, recreation, and settlement patterns. Required classroom work, travel and field research will help the students to develop their understanding of this wilderness area. Student must pay own expenses for field trip. (15-0)

### **GEO 263 The Geography of Appalachia 1 Sem Hr**

Focuses on the economic, social and environmental impact of coal mining on the region of Appalachia. Topics include: shaft, strip and drift mining, reclamation of strip mined lands, the relationship between mine workers and the people of Appalachia, and preservation of threatened natural areas. A weekend field trip is required. Students must pay own expenses. (15-0)

### **GEO 264 The Geography of the Western United States and Canada 4 Sem Hr**

Focuses on the physical, cultural, and historical geography of those regions west of the 100th meridian of longitude in the United States and Canada. Regions to be covered include the Great Plains, Rocky Mountains, the Colorado and Columbia Plateaus, the Basin and Range Province, and the Pacific Coast mountains and basins. Classroom work, plus required travel and field research will develop a first-hand understanding of these areas. Students must pay own expenses for field trip. (60-0)

### **GEO 266 Geography of New England 4 Sem Hrs**

Focuses on both the physical and historical geography of New England. Study areas include Cape Cod, the Boston area, the White Mountains, the Maine coastline and Acadia National Park. The students will study the development of the New England landscape through cultural sequencing, viewing the present as a mosaic of past landscapes. Artifact landscapes will be examined from the American Indian, Colonial Industrial Revolution, maturing economy, and modern eras. Field study, in addition to classroom work is required and must be paid for by the students. (60-0)

### **GEO 267 Geography of Continental Glaciation 1 Sem Hr**

Reviews the causes and consequences of continental glaciation. Topics include climatic change, past and present distribution of continental glaciers and landscape features formed by glaciation. The possibility of the world entering another "Ice Age", will also be discussed along with what social modifications might be necessary if this should happen. Field work in a glaciated area will be included. Students must pay own expenses. (15-0)

### **GEO 268 International Studies in Geography 1-4 Sem Hrs**

A geographic interpretation of selected world regions emphasizing their physical environments, cultural patterns and economic development. Includes class lectures, individual consultation and international field study. Expenses for the field study must be borne by the student. By prior arrangement with appropriate faculty, students may also take International Studies in the following disciplines: SOC 268, ECN 268, MGT 268 (or former GB 268). (60-0)

### **GEO 269 Geography of Florida 3 Sem Hrs**

Focuses on both the physical and cultural geography of Florida. Study areas include the Florida karst landscapes, the Everglades, barrier islands and coral reefs. Students will also investigate citrus and winter vegetable growing, livestock raising, phosphate mining, and the recreational-retirement industry. Various environmental impact problems will be discussed. Field study in addition to classroom work is required and must be paid for by the students. (45-0)

### **GEO 272 Geography of Kentucky 1 Sem Hr**

A regional geographic interpretation of the state of Kentucky, emphasizing its physical, cultural, economic, and historical patterns. Classroom work, travel and field research in Kentucky are required. The student must pay own expenses. (30-0)

### **GEO 274 Geography of West Virginia 2 Sem Hrs**

A regional geographic interpretation of the state of West Virginia, emphasizing its physical, cultural, economic and historic patterns. Classroom work, travel and field research in West Virginia are required. Students must pay own expenses. (30-0)

### **GEO 275 Geography of the Pacific Northwest 3 Sem Hrs**

A regional geographic interpretation of the states of Washington and Oregon, emphasizing their physical, cultural, economic and historical patterns. Classroom work, travel to the field research in the area are required. The student must pay own expenses. (45-0)

## **GEO 290-299 Special Projects in Geography**

## **GEOLOGY COURSES**

### **GLG 102 Volcanoes and Earthquakes 1 Sem Hr**

A study of the internal dynamics of the earth. Major topics will include: catastrophic events in historic times, products of vulcanism, volcanic rocks, vulcanism and geothermal energy, relationship to earthquakes and volcanoes to plate tectonics, interpretation of earthquake records, man-made earthquakes, earthquake prediction and control. (15-0)

### **GLG 103 Life on Other Worlds??? 1 Sem Hr**

An introduction to the origin of life on earth: the nature and characteristics of life, as we know it. An analysis of the chances for life occurring on other worlds in space such as Mars, Jupiter or other planets. A discussion of UFOs and their bearing on the possibility of intelligent life elsewhere in the Galaxy; our attempts to communicate with intelligent life other than ourselves. (15-0)

### **GLG 111 Physical Geology 4 Sem Hrs**

Study of the overall structure of the earth and the rocks which form the crust. An introduction to the processes of erosion and weathering caused by the work of natural agents such as water and ice. Discussion of Plate Tectonic Theory and implications. Laboratory study of common rocks, minerals and selected fossils. Field trips optional. (45-30)

### **GLG 112 Evolution of the Earth 4 Sem Hrs**

Prerequisite: GLG 111. Study of the history of the Earth as recorded in rocks. Description of continental structural development in terms of plate tectonics using North America as the principal example. Origin and evolution of life. Laboratory work includes studies of invertebrate fossils and geologic map interpretation. Field trips optional. Formerly called Historical Geology. (45-30) odd numbered years only.

### **GLG 115 Introduction to Oceanography 4 Sem Hrs**

Explores how the ocean stabilizes the Earth's surface environment. Includes global temperature distributions, El Nino events, ozone depletion, and global warming. Considers the origins and evolution of the ocean basins, currents, circulation patterns, and physical and chemical properties of seawater. Investigates the impact of humans on the marine environment, including shoreline changes, pollution effects, and extraction of natural resources. May include optional field trip to view shoreline features of the Great Lakes. (45-30)



**GLG 117 Introduction to Dinosaurs** **2 Sem Hrs**  
Introduces the study of dinosaurs, their history, development and extinction. Includes the topics of evolution and classification, physical and behavioral characteristics, and the controversy between hot-blooded and cold-blooded interpretations. Examines dinosaur extinction theories, including asteroid impacts and global volcanism, and reviews the famous dinosaur hunters and their heated competition for specimens, past and present. Optional field trip to view museum specimens. (30-0)

**GLG 118 Geology and Dinosaurs** **4 Sem Hrs**  
Designed for non-science as well as science majors who are interested in the basic principles of geology and in the study of dinosaurs. Introduces the student to the physical earth, its rocks, minerals, and external processes. Examines the theory of Plate Tectonics and the changing shape of the continents during the time of dinosaurs. Investigates the concepts of geologic time, evolution, and fossilization as related to the study of dinosaurs. Reviews new and controversial theories, including dinosaur extinction, metabolism, and behavior. Optional field trip to view museum specimens. Credit may be earned for GLG 117 or GLG 118 but not both. (45-30)

**GLG 122 Geology of Michigan** **3 Sem Hrs**  
An interpretation of the origin and characteristics of the principal geological features of Michigan through the application of basic geological principles. Includes some identification of rocks, minerals and fossils. Occasional field trips. (45-0)

**GLG 123 Geology of the Great Lakes Area** **2 Sem Hrs**  
An interpretation of the principal geological features of the Great Lakes region through the application of basic geological principles. Includes some identification of rocks, minerals, and fossils. Field trip required. Students must pay own expenses. (30-0)

**GLG 125 Geology of the National Parks** **3 Sem Hrs**  
A study of the origin of geologic features of selected national parks. Includes an analysis of rocks, minerals, fossils, and physical landscapes as well as the geologic history of varied regions of the United States. Interpretation of topographic and geologic maps of selected areas. (45-0)

**GLG 130 Environmental Geology** **4 Sem Hrs**  
Introduces geology as it relates to human activities, and is designed for both non-science majors and students interested in an environmental career. Emphasizes geologic hazards, including earthquakes, volcanic eruptions, flooding, mass movements, and pollution of water and soil resources. Examines waste disposal along with related topics in medical geology and environmental law. Optional field trip(s) to waste disposal sites and/or remediation sites. (45-30)

**GLG 230 Introductory Field Methods in Hydrogeology** **2 Sem Hrs**  
Prerequisite: Successful completion (grade of "C" or better) in GLG 111, or GLG 130, or BIO 110. Introduces the field techniques used in environmental site assessment, ground water monitoring, and ground water testing. Includes soil water sampling, ground water sampling, water quality testing, and water level recording. Explores topics of geophysical surveying, water well installation, piezometer installation and techniques to determine the direction of ground water flow. (15-45)

**GLG 262 Geology of the Canadian Shield** **1 Sem Hr**  
Studies the geologic and geographic features of the Lake Superior region of Canada. Includes topics such as rock types, origin of landscape features, physical environments, natural resources, and relationships of humans with the environment. Weekend field trip required with students paying own expenses. (15-0)

**GLG 266 Geology of the Grand Canyon** **2 Sem Hrs**  
Prerequisite: Permission of Instructor. A study of the origin and distribution of the geologic features of the Grand Canyon of Arizona. Major topics include rock types, origin of landscape features, geologic history of the Grand Canyon, and human impact of the environment. Field work in the Grand Canyon is required. Students must pay own expenses. (30-0)

**GLG 267 Geology of Northern Lower Michigan** **1 Sem Hr**  
Studies the rocks and glaciated features of the lower peninsula of Michigan. Includes rock types, origin of landscape features, and studies of the exposed bedrock geology. Weekend field trip required with students paying own expenses. (15-0)

**GLG 268 International Studies in Geology** **4 Sem Hrs**  
A geologic interpretation of selected world regions. Emphasis on physical environments, natural geologic processes, and geologic history of the study area. Includes class lectures, individual consultation, and international field study. Expenses for the field study must be borne by the student. (60-0)

#### GLG 290-299 Special Projects in Geology

### HISTORY COURSES

**HIS 111/111H A Survey of Early Western Civilization** **4 Sem Hrs**  
Political, social, economic and cultural history of Europe from prehistoric times through the 1500's. Particular attention given to characteristics of civilizations and their relevant contributions to the modern world. (60-0)

**HIS 112/112H A Survey of Later Western Civilization** **4 Sem Hrs**  
HIS 111 recommended. Political, social, economic, and cultural history of Europe from the 1600s to the present time. Particular attention is given to cultural and democratic movements and their influence on current history. (60-0)

**HIS 204 American Business History** **2 Sem Hrs**  
Covers the period from early colonial to modern times. Emphasis will be placed upon the religious, social, political and economic forces that have shaped the unique character of American business. Major focus will be upon late nineteenth century and modern times with emphasis on industrial growth, business consolidation, the anti-trust movement and the effects of the Depression and New Deal on business. This course may also be taken as MGT 204. Credit may be earned in only one of the following: HIS 204, HIS 205, MGT 204, GB 204, MGT 205, GB 205. (30-0)

**HIS 205 American Business History/With Project** **3 Sem Hrs**  
Covers the period from early colonial to modern times. Emphasis will be placed upon the religious, social, political and economic forces that have shaped the unique character of American business. Major focus will be upon late nineteenth century and modern times with emphasis on industrial growth, business consolidation, the anti-trust movement and the effects of the Depression and New Deal on business. The student will be required to complete a major paper or project. This course may also be taken as MGT 205. Credit may be earned in only one of the following: HIS 204, HIS 205, MGT 204, GB 204, MGT 205, GB 205. (45-0)

**HIS 214 Early African-American History Pre-European Africa to 1877** **3 Sem Hrs**  
An examination of the transition of Africans to Afro-Americans, the Americanized institution of slavery, the development of the Afro-American community, and its impact on the culture and society of the new world. Also examines Afro-American resistance to slavery, free Afro-Americans, and the participation of the Afro-American community in the Civil War and Reconstruction. (45-0)

**HIS 215 Recent African-American History: 1850** **3 Sem Hrs**  
Focus will be on the ideological, strategic and demographic changes and conflicts of Afro-Americans since emancipation, with special emphasis on legal and extra-legal terror and the many social movements (Bookerism, Garveyism, Pan-Africanism, and the 1960s). Also examines emerging Africa, new-racism, and the diversity within the current Afro-American community. (45-0)



**HIS 217 Hispanics in the US 3 Sem Hrs**  
 Surveys the social, cultural, economic and political history of Hispanic Americans (Spanish-speaking), which includes groups such as Mexican-Americans, Cuban-Americans and Puerto Rican-Americans, with emphasis on Mexican-Americans. Analyzes the present status of different Hispanic groups and the problems that minority groups encounter in American society. (45-0)

**HIS 221 Early American History 3 Sem Hrs**  
 An introductory course in American history from its immediate European background through the Civil War Era. Special emphasis is given to the growth of institutions and ideas. The political, economic, and social experiences of the young Republic, and their influence on contemporary American are also examined. (45-0)

**HIS 222 Recent American History 3 Sem Hrs**  
 A survey of modern America from the Gilded Age to the present with special emphasis on the formation of American character traits. Topics such as the frontier, abundance, growth of government and regulation, the Depressions, and the Cold War will be examined for their influence upon the development of the American individual. (45-0)

**HIS 236 History of Michigan 2 Sem Hrs**  
 Explores the history of Michigan from the time of the first known human inhabitants, through the periods of French and British settlement and U.S. acquisition. Emphasizes the study of Michigan history through the periods of territorial status, statehood and industrial growth. Directs attention toward the Saginaw Valley and its relationship to a developing Michigan. Credit may be earned in one of the following: HIS 113, HIS 114, HIS 236 or HIS 237. (30-0)

**HIS 237 History of Michigan/With Project 3 Sem Hrs**  
 Explores the history of Michigan from the time of the first known human inhabitants, through the periods of French and British settlement and U.S. acquisition. Emphasizes the study of Michigan history through the periods of territorial status, statehood and industrial growth. Directs attention toward the Saginaw Valley and its relationship to a developing Michigan. Includes a major paper or project. Credit may be earned in one of the following: HIS 113, HIS 114, HIS 236 or HIS 237. (45-0)

**HIS 261 The Civil War Era 3 Sem Hrs**  
 A survey of American Civil War era, from the origins of sectional conflict through reconstruction. While tracing the narrative development of major events, the course will examine the social, economic, political, and technological changes brought by the war, which made the Civil War the defining event in modern American history. (45-0)

**HIS 268 International Studies in History 1-4 Sem Hrs**  
 The student will do an in-depth historical study in one or more aspects of the history of the country other than the United States. Overseas study is an integral part of the course. Expenses for travel and overseas study must be borne by the student. (60-0)

**HIS 275 The Vietnam War 3 Sem Hrs**  
 An interdisciplinary examination of the Vietnam War from its earliest beginnings as a colonial conflict to the withdrawal of American forces in 1975. The course seeks to integrate military, diplomatic and political factors in order to understand America's involvement. It also is an attempt to consider American decision-making in the broad context of the nation's global outlook and policies. Credit may be earned in HIS 275 or POL 275 but not in both. (45-0)

**HIS 290-299 Special Projects in History**

## HEALTH SCIENCE COURSES

**HSC 105 Medical Terminology 2 Sem Hrs**  
 Designed to develop a basic understanding of the spelling, meaning and pronunciation of commonly used prefixes, suffixes, and root words, and their combining forms, used in all fields of allied health professions. (30-0)

**HSC 140 Basic Medical Emergencies 2 Sem Hrs**  
 Provides the background necessary to respond to basic emergency situations in the clinical setting. Includes respiratory, cardiac, neurological, and diabetic emergencies. Cardiopulmonary resuscitation certification requirements must be met for successful completion of course. (30-0)

**HSC 205 Legal Aspects of the Health Care System 2 Sem Hrs**  
 An overview of state legislation affecting various aspects of the health care system, including study of common legal problems, etc., such as dispensing of medication and privacy of medical records. Designed primarily for health care professionals. (30-0)

**HSC 210 Medical Office Pharmacology 1 Sem Hr**  
 Prerequisites: BIO 101, HSC 105, or permission of instructor. Presents the necessary information to comply with the federal laws regarding accurate and secure drug records and the interpretation of prescriptions and communication of medication orders to other professionals. Credit may be earned in MA 205 or HSC 210 but not in both. (15-0)

**HSC 290-299 Special Projects in Health Science**

**HSC 310 Basics of Managed Care 3 Sem Hrs**  
 Provides overview of managed health care industry. Discusses the origins, mechanics and effects of managed care to the patient, provider and consumer. (45-0)

## HUMAN SERVICES COURSES

**HSR 101 Human Services I 2 Sem Hrs**  
 Presents an overview of the basic programs and social institutions, which provide human services, as well as an introduction to basic skills needed by human services workers. (30-0)

**HSR 102 Human Services II 2 Sem Hrs**  
 Prerequisite: HSR 101. Presents and provides opportunities to demonstrate applications of methods and problem solving techniques used by human services workers in a variety of settings. (30-0) O

**HSR 290-299 Special Projects in Human Services**

## INTERIOR DESIGN COURSES

**ID 100 Introduction to Interior Design 3 Sem Hrs**  
 This course will cover the aims, principles, and means of design. Light and color will be thoroughly explored including color theory and color planning. Home planning will be analyzed in relation to activities, space and equipment. Enrichment of space through the use of accessories, plants, paintings, prints, and sculpture will be studied. The student will also be introduced to lighting, heating, ventilation, and acoustics. (45-0)

**ID 170 Design Elements 4 Sem Hrs**  
 Prerequisite: ID 100, MGT 110 or GB 110 and permission of instructor. Appropriate treatment and materials for windows, walls and floor coverings will be studied. Emphasis will be placed on current treatment trends and the process of measuring and translating measurement accurately into material needs and cost estimates. Field trips, guest speakers and practical experiences will be emphasized. (60-0)

**ID 200 Spatial Analysis and Presentation 3 Sem Hrs**  
 Prerequisite: ARC 105 and ID 100. (Recommended that ID 200 and ID 210 be taken concurrently). Emphasis will be placed on the analyzation of spatial arrangement and the relationship it has to adjacent space and accepted standards. CAD and basic drawing methods will be utilized and standard building blueprints will be studied. Students will conduct presentations of floor plan arrangements, interior elevations, and interior perspectives. Familiarization with microcomputers required or permission of instructor. Credit may be earned in ID 200 or ARC 200 but not in both. (45-0)

**ID 210 Furniture 3 Sem Hrs**  
(Recommended that ID 200 and ID 210 be taken concurrently). A study of furniture as an essential element in interior design. Major furniture styles will be covered from a historical perspective with applications to present uses. The manufacture of both case and upholstered goods for the purpose of learning construction details, order, placement and delivery cycle, and the cost to quality relationship will be included. (45-0)

**ID 230 Applied Interior Design 3 Sem Hrs**  
Prerequisite: ID 210. Designed so the student will learn how to deal effectively with special problem areas in interior decoration. The student will learn how to work with clients, how to interview and determine needs and wants and translate the information into practical decorating solutions, including shopping for appropriate floor and wall coverings, furniture, window treatment and accessories. The student will work with an actual client family, be given an established budget, prepare and give appropriate oral and visual presentations to the client. (45-0)

**ID 240 Commercial Interior Design 2 Sem Hrs**  
Prerequisite: ID 200 and permission of instructor. A study of materials used, equipment necessary, and furniture available in the field of contract/commercial design. Legal requirements for commercial, institutional and other public spaces will be discussed. Student presentation will be emphasized. (30-0)

**ID 241 Contract/Commercial Design II 2 Sem Hrs**  
Prerequisite: ID 240 and permission of instructor. The application of contract/commercial elements utilizing actual space project examples. Contract design within legal boundaries will be stressed. Project examples will include commercial offices, institutional work sites and other public environments. Student presentations will be emphasized. (30-0)

**ID 245 Design Trends 2 Sem Hrs**  
Prerequisites: ID 241, ID 230 or concurrently. Study of current trends in furniture, accessories, textiles, and lighting. Student presentation, guest speakers and field trips will be emphasized. This is a "capstone" course recommended to be taken concurrently with ID 230. (30-0)

**ID 250 Seminar in Interior Design 2 Sem Hrs**  
Prerequisite: ID 100 or permission of instructor. Students will study the New York interior design market. Displays, styles of furniture, and current period representations will be studied at the manufacturer showrooms. Tour of designers' studios and discussion with area designers, lamp and accessories, museums, school, textiles company, carpeting firms and other places of interest will be included. Normally, the class will spend one week in New York at the beginning of spring semester. Students pay tuition plus all expenses. (30-0)

**ID 251 Merchandise Mart Experience 1 Sem Hr**  
Prerequisite: ID 100 or permission of instructor. Primarily for majors in the Interior Design curriculum. Students will study the Chicago Merchandise Mart and area resources available to interior designers. Opportunity to visit manufacturing plants, showrooms, area designers, retail operations, museums and other places of interest will be arranged. Normally the class will spend three days in the market. Students pay tuition plus all their expenses. (15-0)

#### **ID 290-299 Special Projects in Interior Design**

### **INTERDISCIPLINARY HUMANITIES COURSES**

**IHU 101 Humanities Through the Arts 3 Sem Hrs**  
A survey of the human condition as seen through film, dramas, music, literature, painting, sculpture, and architecture with an emphasis on the history, techniques, meaning, and evaluation of individual works of western art. (45-0)

**IHU 161 Projects in Cross-Cultural Learning 1 Sem Hr**  
Assign student volunteers to either community agencies providing cross-cultural experiences or to an international work experience. Supportive seminars will provide both structure and background knowledge of the particular country involved. (A minimum of 30 hours volunteer placement is required). Credit may be earned in IHU 161 or SOC 161, but not both. (15-30)

**IHU 162 Projects in Cross-Cultural Learning 2 Sem Hrs**  
Assign student volunteers to either community agencies providing cross-cultural experiences or to an international work experience. Supportive seminars will provide both structure and background knowledge of the particular country involved. (A minimum of 60 hours volunteer placement is required.) Credit may be earned in IHU 162 or SOC 162, but not both. (15-60)

**IHU 201H Honors Colloquy 3 Sem Hrs**  
Prerequisite: Approval by Honors Program Director required of all Honors students. Explores the elements of critical and creative thinking. Emphasizes relationships among thinking, writing, and productive interaction with others, as well as the interdisciplinary nature of truth and knowledge. Includes project and/or research writing at instructor's discretion. Credit may be earned in LIT 201H or IHU 201H but not both. (45-0)

**IHU 210 Death and Dying 3 Sem Hrs**  
Prerequisite: ENG 111, ENG 111A or permission of instructor. Studies attitudes, practices, beliefs, theories, institutions of death and dying in contemporary, historical western and also some non-western societies. Addresses issues of pain management, doctor-assisted suicide, quality versus quantity of life, organ donation, bereavement, the funeral industry, living wills and durable powers of attorney. (45-0)

**IHU 216 Producing a Student Publication 6 Sem Hrs**  
Prerequisite: ENG 111. Provides a guided opportunity to learn about publishing by compiling, selecting, editing, and designing an annual publication of student writing, photography, and artwork. Focuses on hands-on experience in critical reading, writing, and thinking; editing; layout; production details; marketing; design; and distribution. (60-90)

**IHU 261 Contemporary Art in Chicago 2 Sem Hrs**  
Surveys contemporary art forms, processes, and ideas of the international art market in a 3-day visit to Chicago which will include the International Art Fair, the Chicago Art Institute and the Contemporary Museum of Art. Students pay tuition plus all of their expenses. (30-0)

**IHU 282H Seminar in Social Issues 3 Sem Hrs**  
Prerequisite: Honors program participant or permission of instructor. An integrated study involving exploration and development of critical thinking, analysis and problem-solving skills with an interdisciplinary approach focusing on a selected social issue. (45-0)

#### **IHU 290-299 Special Projects in Interdisciplinary Humanities**

### **INDUSTRIAL SUPERVISION COURSES**

**IS 104 Construction Foreman Training 3 Sem Hrs**  
Course developed by construction people for construction people who wish to acquire foreman training skills. Covers job supervisor's role as the person in the middle and relates the concepts of leadership, motivation, problem solving, communication, training, safety, materials handling and evaluation to foreman tasks. (45-0)

**IS 110 Industrial Supervision 3 Sem Hrs**  
Designed to give the student a general understanding of the following areas: Introduction to management; organization structures; product development; plant location and equipment; cost controls, material and production controls; personnel administration and management. (45-0)

**IS 118 Industrial Safety 2 Sem Hrs**  
Safety fundamentals as related to the economics of accident prevention, analysis of accident causes, mechanical safeguards, fire prevention, plant housekeeping, occupational diseases, first aid, safety organization, protective equipment, and the promotion of safe practices. (30-0)



**IS 120 Supervisor/Employee Relations 3 Sem Hrs**  
Prerequisite: IS 110. Course designed to help the supervisor solve day-to-day people problems. Presents techniques for communication and decision-making which are based on work experience and scientific research. (45-0)

**IS 240 Production Planning & Control 4 Sem Hrs**  
Prerequisites: MFG 111, MT 110 or MTH 100 or equivalent. Pre-production planning of the most economical methods, machines, operations, and material for the manufacture of a product. The planning, scheduling, routing, and detailed procedure of production control. (60-0)

**IS 290-299 Special Projects in Industrial Supervision**

## **INDUSTRIAL TECHNOLOGY EDUCATION COURSES**

**ITE 330 Career and Technology for Children 3 Sem Hrs**  
Prerequisite: ED 200B or Permission of Instructor. Covers how to teach students career awareness, exploration, and preparation. Creates teaching materials using industrial tools, processes and supplies with a focus on 7-12 grade students. (45-0)

**ITE 340 Teaching Methods and Strategies in Industrial/Technical Education 3 Sem Hrs**  
Surveys local, state, and national standards for teaching industrial technology. Considers current and historic philosophies, methods and trends. (45-0)

**ITE 350 Curriculum Development and Facility Planning in Industrial/Technology Education 3 Sem Hrs**  
Prerequisite: ED 200B or Permission of Instructor. Develop course, program, and curriculum materials. Specify materials, tools, machines, and facilities for industrial technology education. (45-0)

## **LEGAL SUPPORT STUDIES COURSES**

**LAS 110 Legal Ethics and Responsibilities of the Legal Assistant 3 Sem Hr**  
Provides an overview of the various roles, responsibilities, and problems found in the Legal Assistant profession, and the legal ethics, legal terminology, and basic skills needed. Introduces legal forms and procedures, as well as computer skills and computer programs. Places substantial emphasis on the importance of legal ethics for the Legal Assistant through study of the State Bar of Michigan Rules of Professional Conduct, the Michigan Code of Judicial Conduct, and the National Association of Legal Assistants Code of Ethics and Professional Responsibility. Addresses preparation for the CLA examination, the importance of communication skills, keeping track of deadlines, calendars, and mailing procedures. (45-0)

**LAS 115 Principles of Substantive Law 3 Sem Hrs**  
Prerequisite: LAS 110 or concurrently. A general introduction to the dynamics of the law and legal process, including the origin and development of the law, types of law and the judicial system. Examination of substantive legal subjects including contracts, torts, property, criminal and business related subjects. Emphasis on recognition of legal issues and the understanding of legal terminology. (45-0)

**LAS 120 Legal Research & Writing I 3 Sem Hrs**  
Prerequisite: LAS 110, LAS 115 and ENG 111 or OSE 151. Legal research techniques to familiarize students with the most frequently used reference materials. Includes basic legal reasoning and writing skills for logical, organized problem solving. (45-0)

**LAS 125 Civil Litigation I 2 Sem Hrs**  
Prerequisite: LAS 115. The various stages of evaluating and preparing a civil matter for litigation, using Michigan rules of civil procedures and evidence will be presented. An efficient and systematic way of handling fact investigation, drafting pleadings, discovery and file control will be studied. (30-0)

**LAS 130 Legal Research & Writing II 3 Sem Hrs**  
Prerequisite: LAS 120 with minimum grade of "C" (2.0). Specialized legal research techniques, trial and appellate briefs and state and federal law. Basic legal reasoning and writing skills for logical, organized problem solving. Independent research in a law library may be necessary. (45-0)

**LAS 135 Civil Litigation II 2 Sem Hrs**  
Prerequisite: LAS 125. Pretrial stages of a lawsuit with emphasis upon trial preparation including motions in limine, witness preparation and jury voir dire, concluding with trial and post-trial motions and the appeal process. (30-0)

**LAS 150 Real Estate Law 2 Sem Hrs**  
Prerequisite: Enrollment in either the Legal Assistant Studies program, the Real Estate program, or permission of instructor. Introduces the principles of real estate law. Familiarization with the process and procedures involved in the buying and selling of real estate, mortgage loans and leasing, in addition to preparing or evaluating surveys and legal descriptions, deeds of conveyance, title search reports, agreements, closing and leases. (30-0)

**LAS 201 Computer Assisted Legal Research 1 Sem Hr**  
Prerequisites: LAS 130 or MGT 252 or GB 252 and OAT 170 or permission of instructor. Develops familiarity with the use of commercially available legal databases, including development of search queries. (Outside lab assignments may be required). (15-0)

**LAS 210 Estate and Trust Administration 2 Sem Hrs**  
Prerequisite: Students in Legal Assistant Studies program or permission of instructor. An in-depth study of the administration of a decedent's estate from initial conference through the closing of an estate and the distribution of assets with emphasis on preparation of proper probate documentation, preparation of proper tax returns including federal estate tax returns and fiduciary returns, and explanation of Michigan inheritance tax. (30-0)

**LAS 220 Environmental Law 2 Sem Hrs**  
Prerequisite: Students in Legal Assistant Studies program or permission of instructor. A survey of issues pertaining to environmental law. Emphasis on the process of integrating environmental policies into the social system, implementing environmental policies through the legal system, and accommodating environmental values with economic realities, traditional property rights, and national energy policy. (30-0)

**LAS 235 Criminal Law and Procedure 3 Sem Hrs**  
Prerequisite: Students in Legal Assistant Studies program or permission of instructor. A study of formal legal processes involved in criminal practice from arrest through post-trial motions, sentencing and appeal. Constitutional rights of the accused and the definitions of various criminal offenses will also be covered. (45-0)

**LAS 240 Domestic Relations 2 Sem Hrs**  
Prerequisite: Students in Legal Assistant Studies program or permission of instructor. A study of the theoretical and practical aspects of family law with an emphasis on Michigan family law, including dissolution of marriage, child custody, support, property settlements, judgments and the role of the Friend of the Court. Basic techniques in obtaining facts from clients in order to prepare and draft complaints, answers, financial affidavits and verified statements will be presented. (30-0)

**LAS 245 Personal Injury 3 Sem Hrs**  
Prerequisite: Students in Legal Assistant Studies program or permission of instructor. An introduction to medical terms based on a "building block" system of word formation. The principles and legal theories relating to intentional and negligent torts to the person. Will include workman's compensation, malpractice/negligence of professionals, auto negligence, products liability, dram shop liability, assault and battery, and premises liability. (45-0)

**LAS 250 Corporate Law 2 Sem Hrs**  
Prerequisite: Students in Legal Assistant Studies program or permission of instructor. The nature of corporations, partnerships and proprietorships with an emphasis on the corporate structure including formation and dissolution, amending Articles of Incorporation and by-laws, shareholders' and directors' meetings, corporate equity and debt securities, as well as employment and shareholders agreements. (30-0)



**LAS 253 Bankruptcy Law** 3 Sem Hrs  
Illustrates the legal aspects of the bankruptcy law and demonstrates the practical approach to working in this area. Review of Federal Bankruptcy law, including different types of bankruptcy chapter, exemptions, dischargeable and non-dischargeable debts, preferences, the role of the Bankruptcy Trustee and preparation of petitions and schedules in bankruptcy. Emphasizes the effective use of the legal support professional. (30-0)

**LAS 260 Legal Assistant Internship** 2 Sem Hrs  
Prerequisite: Must have completed all Legal Assistant Studies required courses or permission of LAS Coordinator. Requires eighty (80) hours of work experience in a law or law-related office. (10-0)

**LAS 290-299 Special Projects in Legal Assistant Studies**

## LIBRARY SKILLS COURSES

**LIB 195 Library Research Skills** 1 Sem Hr  
Develops the ability to access, analyze, evaluate, use, document, and communicate information from library sources including electronic indexes, the on-line catalog, and introduces Internet. Credit may be earned in LIB 195 or ENG 195, but not in both. (15-0)

**LIB 290-299 Special Projects in Library Skills**

## LITERATURE COURSES

**LIT 201H Honors Colloquy** 3 Sem Hrs  
Prerequisite: Approval by Honors Program Director. Required of all honors program students. Explores the elements of critical and creative thinking. Emphasizes relationships among thinking, writing, and productive interaction with others, as well as the interdisciplinary nature of truth and knowledge. Includes project and/or research writing at instructor's discretion. Credit may be earned in LIT 201H or IHU 201H but not both. (45-0)

**LIT 219 Literary Analysis** 3 Sem Hrs  
Prerequisite: ENG 112. A survey of, and practice in, methods of literary interpretation and appreciation, from the close reading strategies of New Criticism to the contemporary considerations of reader-response theory. Interpretive papers on particular works of fiction, poetry and drama are required. (45-0)

**LIT 220 Readings in Poetry** 3 Sem Hrs  
Prerequisite: ENG 112. Studies the background, developments, and the current state of modern poetry. Emphasizes poetry by American and British authors. (45-0)

**LIT 221 Readings in the Short Story** 3 Sem Hrs  
Prerequisite: ENG 112. The student will read selected short stories of British, American, and other authors in addition to increasing one's understanding of this relatively modern form, the student will explore ways in which the short story is personally meaningful in depicting our perception of ourselves and the world in which we live. (45-0)

**LIT 222 Readings in the Novel** 3 Sem Hrs  
Prerequisite: ENG 112. From a reading of selected novels the student will develop understanding of the novel form. The student will also learn how to derive personal meaning and satisfaction from novels chosen from different times, places, and cultures. (45-0)

**LIT 223 Readings in Drama** 3 Sem Hrs  
Prerequisite: ENG 112 or instructor permission. Studies historical and popular American, British and other plays. Examines the effects of drama on both American, British and other cultures. (45-0)

**LIT 224 Literary Festival** 3 Sem Hrs  
Prerequisite: ENG 112 or permission of instructor. Examines a body of literature organized by the selection of material either from the works of one author, genre, or topic, or a combination thereof. (e.g. science fiction, war novel, thrillers, horror, etc.) Course content to be announced each semester prior to registration. (45-0)

**LIT 226 Introduction to Film** 3 Sem Hrs  
Follows the creation of a film from the original idea to final production. Examines film as a model of popular entertainment and as an art form. Focuses on identifying the media's components and developing the viewers' standards of appreciation. (45-0)

**LIT 227 The American Motion Picture** 3 Sem Hrs  
Prerequisite: ENG 112. Studies popular films, with major emphasis on American culture as reflected in the motion picture. Examines the effect of the images portrayed in motion pictures on the perception of American society and history; topics vary from semester to semester. (45-0)

**LIT 228/228H Masterpieces of World Literature: Beginnings through 1500s** 3 Sem Hrs  
Prerequisite: ENG 112, ENG 112A, or ENG 112H, permission of instructor. Surveys world literature through the 1500s that includes, but is not necessarily limited to, the masterpieces of the Western tradition. Concentrates on recurring themes, such as a person's relationship to God and nature, individual and social morality, liberty and responsibility, social and economic justice, and the search for a meaningful existence. (45-0)

**LIT 229 Masterpieces of World Literature: 1600s to the Present** 3 Sem Hrs  
Prerequisite: ENG 112, ENG 112A, or ENG 112H, permission of instructor. Surveys world literature from the 1600s to the present including but not necessarily limited to the masterpieces of the Western tradition. Concentrates on recurring themes, such as a person's relationship to God and nature, individual and social morality, liberty and responsibility, social and economic justice, and the search for a meaningful existence. (45-0)

**LIT 241 Introduction to Mythology** 3 Sem Hrs  
Prerequisite: ENG 112. Provides an introduction to some of the concepts of mythology and the presence of these concepts in art and literature in particular. Considers the functions of mythology, the universality of the journey patterns in all myths, the nature of mythic imagery, the distinction between mythos and logos as patterns in thinking, the approaches available in examining particular myths and the application of all these dimensions in reading a given story. (45-0)

**LIT 242 Introduction to British Literature** 3 Sem Hrs  
Prerequisite: ENG 112. Provides a sampling of the work of some of the major authors in British Literature. Requires works to be read and examined for an understanding of the material, an appreciation of the literary forms and for the awareness of unifying themes that hold together a culture's conceptual framework. Enhances reading skills and aesthetic appreciation through exposure, discussion, writing and critical thinking. (45-0)

**LIT 245 Biblical Literature: Old Testament** 3 Sem Hrs  
This course will be a critical study of the literature of the Old Testament. It will treat the Old Testament Canon in its historical development, and examine both the literary styles and the changing theological and ethical ideas. (45-0)

**LIT 246 Biblical Literature: New Testament** 3 Sem Hrs  
A critical study of the literature of the New Testament with some attention given to the Inter-Testamental literature. The literature will be studied in terms of its historical development. Some attention will be given to the canonization of the New Testament, to the different literary styles and to the theological and ethical ideas. (45-0)

**LIT 251 Children's Literature** 4 Sem Hrs  
Prerequisite: ENG 112 or equivalent second level writing course. Surveys literature for children in the elementary grades. Explores quality trade books for children; presents respected writers and illustrators in various genres. Dispels commonly misconceived and generic thinking about children's literature, replacing with more perceptive criteria and reflective judgment of book selection. Results in greater knowledge, understanding, and appreciation of children's literature. (60-0)



**LIT 252 Young Adult Literature 3 Sem Hrs**  
Prerequisite: ENG 112, ENG 112A, ENG 112H, or ENG 113. Explores literature written for and about young adults, defined as those students in middle of junior high and high school. Surveys quality trade books, with emphasis on top writers of the best, most engaging literature. Increases awareness of how literature speaks to young adults and engages them in language and learning experiences. Appropriate for general students of literature and those planning to enter careers in secondary education, sociology, psychology, and juvenile justice. (45-0)

**LIT 253 Literature for Preschool Children 3 Sem Hrs**  
Surveys quality fiction and nonfiction trade books for preschool children, with emphasis on top writers and illustrators of the best, most engaging literature. Increases awareness of how literature speaks to young children and engages them in language and learning experiences. (45-0)

**LIT 260 Holocaust History & Literature 3 Sem Hrs**  
Designed especially for students new to Holocaust studies. Covers the years 1933 to 1945, focusing on the role of perpetrators, victims, bystanders, and those involved in resistance and rescue. Uses a variety of readings, guest speakers, films and a field trip to the Holocaust Memorial Museum in West Bloomfield to address core questions: How did the Holocaust happen? Who is responsible? What can we learn from this catastrophe? (45-0)

**LIT 268 International Studies in Literature 1-4 Sem Hrs**  
The student will do an in-depth study in one or more aspects of the literature or film of a country other than the United States. Includes class lectures and individual consultation. Overseas study is an integral part of the course. Expenses for travel and overseas study must be borne by the student. (60-0)

**LIT 269 Native North American Literature 3 Sem Hrs**  
Prerequisite: ENG 112. Surveys the literature of Native North Americans: poetry, short stories, novels and non-fiction, including biographies of important Indian leaders. Develops an understanding of the cultures which produced the literature. (45-0)

**LIT 271/271H American Literature to 1865 3 Sem Hrs**  
Prerequisite: ENG 112. Studies major movements and themes in American literature as they appear in the works of important authors from the Puritan period to and including the Age of Romanticism (45-0)

**LIT 272 American Literature Since 1865 3 Sem Hrs**  
Prerequisite: ENG 112. Studies major movements and themes in American Literature after the age of Romanticism through the Age of Realism and New Directions. (45-0)

**LIT 272A American Literature since 1865 with Learning Community 3 Sem Hrs**  
Concurrent enrollment ENG 111 or ENG 112 in a coordinated learning community. Studies major movements and themes in American Literature after the age of Romanticism through the Age of Realism and New Directions. (45-0) Credit may be earned in LIT 272 or 272A but not both. (45-0)

**LIT 274 Mexican-American Literature 3 Sem Hrs**  
Prerequisite: ENG 112 or permission of the instructor. Studies novels, short stories, poetry and non-fiction by Mexican-Americans. Explores some cultural elements such as ethnicity, self-hood, self-definition, machismo and gender issues, religious influences, the tradition of curanderos and la lloron. Constructs an understanding of how culture (can) affect creative expression. (45-0)

**LIT 276 Contemporary American Fiction (1945 to Present) 3 Sem Hrs**  
Prerequisite: ENG 112 or permission of instructor. Studies trends, techniques, and themes in recent American novels and short stories. Requires reading, analyzing, and critiquing works of modern writers. (45-0)

**LIT 277 Early African-American Literature 3 Sem Hrs**  
Prerequisite: ENG 112 or equivalent. Studies American history and trends that affected African-American writers from the oral tradition to the written works. (45-0)

**LIT 278 Modern African-American Literature 3 Sem Hrs**  
Prerequisite: ENG 112 or equivalent. Studies current trends in both cultural and historical contexts. Examines the ways in which Modern African-American Literature is influenced by American history and how it affects the lives of African-Americans. (45-0)

**LIT 283 Literature of Mysticism 3 Sem Hrs**  
Prerequisite: ENG 112. Explores literature about mysticism, both secular and religious. Designed to help students begin an inner search for authenticity, personal integration and self-awareness. Provides a variety of possibilities for developing innate potentialities and for achieving altered states of consciousness through awareness exercises, meditation, chanting, fantasy journeys and journal writing. (45-0)

**LIT 285 Women in Literature 3 Sem Hrs**  
Discusses women as literary characters and as authors in time periods and cultures selected by instructor. Concentrates on women's perceptions of social structures, the blending of private and public spheres, and women's relationships to the world of publishing and literary criticism. Contrasts a woman-centered look at literature with more traditional, canonical approach to literature. (45-0)

#### LIT 290-299 Special Projects in Literature

### LIFELONG WELLNESS COURSES

**LW 101 Fitness for Life 1 Sem Hr**  
Introduces basic concepts underlying fitness and wellness as they relate to optimal healthful living using a wide variety of aerobic conditioning and resistance training techniques. (0-30)

**LW 106 Athletic Conditioning 1 Sem Hr**  
Designed to improve current level of fitness. Uses weight, circuit, plyometric, and endurance exercises to improve power, balance, and agility. Incorporates the five health-related components of fitness: cardiorespiratory endurance, muscle strength and endurance, flexibility, and body composition. (15-15)

**LW 108 Weight Training 1 Sem Hr**  
Introduces a systematic program of body conditioning and development through the use of weight exercises to improve individual wellness. Credit may be earned in only one of the following: LW 108 or LW 109. (0-30)

**LW 110 Jogging 1 Sem Hr**  
Introduces jogging as a means to obtain or improve current levels of health or conditioning. Emphasizes jogging to impact cardiorespiratory health. Uses aerobic endurance activities involving training techniques, skilled pacing, weights, calisthenics, proper stretching, and nutritional information will be employed to provide a complete exercise program. (15-15)

**LW 111 Circuit Training 1 Sem Hr**  
Designed to maintain and improve physical fitness levels. Weights, calisthenics and endurance exercises are used in different combinations to provide complete workouts in a limited amount of time. (0-30)

**LW 112 Traditional Chinese Qi Kong 1 Sem Hr**  
Enhances physical and emotional well-being through the ancient Chinese discipline of Qi Kong. Utilizes deep breathing exercises to control the mind over the body. Develops muscular endurance, muscular strength, flexibility, balance, and cardiorespiratory health while gaining a sense of contentment. Increases the blood flow, reduces tension, and creates relaxation. Strengthens the body to defend against physical impact on the outside and against illness by improving the immune system on the inside. Teaches the history, theory, and philosophy of Qi Kong. (15-15)

**LW 113 Tae Kwon Do I 1 Sem Hr**  
Non-contact martial art class stressing prior technique and qualities of respect, self-discipline, and skills of self-defense. (0-30)

**LW 114 Tae Kwon Do II 1 Sem Hr**  
Prerequisite: LW 113 or Instructor permission. Intermediate non-contact martial art class stressing advanced techniques. Uniform required. (0-30)

- LW 115 Aikido 1 Sem Hr**  
Provides an introduction to a non-aggressive martial art stressing use of spiritual energy self-cultivating, mutual respect, and skills of self-defense. (0-30)
- LW 116 Tai Chi 1 Sem Hr**  
Enhances physical and emotional well being through the ancient Chinese martial art Tai Chi. Improves understanding and knowledge of the philosophy, theory, and application of the Wu style of Tai Chi, and how this relates to self-improvement in daily life. Improves muscular endurance, muscular strength, flexibility, balance, and cardiorespiratory health based on muscular contraction and release in continuous slow movements of the Tai Chi form. (15-15)
- LW 118 Sports Judo 1 Sem Hr**  
Introduces the rules, skills, and courtesies in sports judo, as well as the special conditioning required. Credit may be earned in only one of the following: LW 117, LW 118, LW 119. (0-30)
- LW 120 Traditional Chinese Kung Fu 1 Sem Hr**  
Enhances physical and emotional well being with the theories, concepts and principles of Praying Mantis Kung Fu. Teaches understanding and knowledge of the history and philosophy of this style of traditional self-defense. Improves muscular endurance, muscular strength, flexibility, balance, and cardiorespiratory health while learning self-defense. (15-15)
- LW 121 Intermediate Sports Judo 1 Sem Hr**  
Prerequisite: LW 119 or permission of instructor. Continuing improvement of beginning techniques, additional throwing, groundwork, and combination throwing techniques taught. (0-30)
- LW 124 Basketball 1 Sem Hr**  
Introduces basic skills of passing, dribbling, shooting, positional play, rules, and strategy of the game. Includes special conditioning to improve individual wellness. Credit may be earned in only one of the following: LW 123, LW 124, LW 125. (0-30)
- LW 127 Volleyball I 1 Sem Hr**  
Basic skills of handling the ball, passing setting, spiking, net-rebound play, and blocking. Rules and strategy are included. (0-30)
- LW 128 Volleyball II 1 Sem Hr**  
Prerequisite: LW 127 or permission of instructor. Continuing improvement of beginning skills and the addition of experience in advanced play. Advanced strategies including offensive play patterns (4-0, 6-0, and switching) and defensive play patterns (middle back and middle up). Use of current USVBA rules. (0-30)
- LW 131 Racquetball I 1 Sem Hr**  
Introduces basic skills and rules necessary to participate in racquetball which is a competitive game played in a four-walled court by two, three, or four players using stringed racquets to serve and return the ball. (0-30)
- LW 137 Tennis I 1 Sem Hr**  
An introduction to the basic strokes in tennis along with rules, strategies, and courtesies of the game. Special fees are charged when taught off campus in indoor tennis facilities. (0-30)
- LW 145 Softball 1 Sem Hr**  
Covers throwing, catching, batting, and base running, along with the rules of the game. (0-30)
- LW 147 Archery 1 Sem Hr**  
Introduction to the basic skills in shooting, both recurved and compound bows, in target and field archery. Students must furnish own arrows and finger protection. (0-30)
- LW 149 Golf I 1 Sem Hr**  
Fundamentals in the use of woods, irons, and putter along with the rules and courtesies of the game. A fee is charged for off campus golf course use. (0-30)
- LW 151 Kick Boxing 1 Sem Hr**  
Presents Kick Boxing as a means of self-defense and conditioning. Provides maximum cardiorespiratory benefits, muscular endurance, speed, and agility in addition to balance, flexibility, and mind/body integration. (0-30)
- LW 152 Astanga Yoga 1.5 Sem Hrs**  
Introduces the basic tools used in learning Astanga Yoga. Use sequential postures, called asana, for linking together a vigorous flow of movements. Includes workout that is physically, spiritually, and mentally engaging. (15-30)
- LW 153 Dance Aerobics 1 Sem Hr**  
Provides information and skills needed to assess and improve fitness through the use of aerobic dance, exercises to music, and analysis of personal nutrition habits. (0-30)
- LW 154 Non-Impact Aerobics 1 Sem Hr**  
Emphasizes the integration of mind, body, and spirit through non-impact movements. Combines principles of tae kwon do, tai chi, ballet yoga, aikido, and modern, jazz, and ethnic dance. (15-15)
- LW 155 Slide Aerobics 1 Sem Hr**  
Prepares and strengthens the body for lateral or angular stress while providing a superb cardiovascular workout. Incorporates upper and lower body strength and endurance resistance exercises in addition to developing endurance, power, and balance. (0-30)
- LW 157 Step Aerobics 1 Sem Hr**  
Incorporates bench stepping to enhance cardiorespiratory endurance and muscle tone using the aerobic principle. Emphasis on the importance of fitness and a healthy lifestyle is also applied. (0-30)
- LW 158 Pilates 1 Sem Hr**  
Provides total body strengthening, stretching and conditioning through Pilates-based mat work to achieve overall fitness and improved health. Focuses on the attainment of core strength in the abdomen and trunk. Includes specific exercises concentrating on the use of breathing patterns to help control movement, and visual imagery to engage the mind and body together. (15-15)
- LW 159 Fitness Walking 1 Sem Hr**  
Introduces the concept of daily walking to contribute to ones wellness, with emphasis on developing personal walking program. (15-15)
- LW 163 Modern Dance I 1 Sem Hr**  
Introduces the fundamentals of body movement through rhythmic activities designed to improve strength, flexibility, timing, spatial awareness and coordination. Includes improvisation and simple choreography, and a brief survey of the history of modern dance and the contemporary dance scene. (0-30)
- LW 164 Ballroom Dancing 1 Sem Hr**  
Introduces the basic steps and music of the Fox Trot, Waltz, Swing, Cha Cha, Rhumba, and Tango. (0-30)
- LW 165 Jazz Dance I 1 Sem Hr**  
For the beginner, an introduction to basic jazz dance techniques (stretches, isolations, floor work, turn and locomotor patterns, etc.) and practice in combining them into dance phrases. There will be simple choreography problems and a survey of the history of jazz dance and of the contemporary jazz dance scene. (0-30)
- LW 167 Ballet I 1 Sem Hr**  
An introduction to the basic movements of ballet coordinated with exercises for stretching, flexing, and toning. Also stresses postural alignment and correction, basic barre work, and beginning center adage and allegro movements. (0-30)
- LW 168 Ballet II 1 Sem Hr**  
Prerequisite: LW 167 or instructor permission. Continues and further develops the basic movements introduced in Ballet I with emphasis on combinations of movements (enchainments) to develop concentration, balance and speed. (0-30)



- LW 172 Swimming I 1 Sem Hr**  
A "learn to swim" course for beginners. Fundamental swimming and safety skills are stressed. (0-30)
- LW 173 Swimming II 1 Sem Hr**  
Prerequisite: LW 172. Theory and practice of the five basic swimming strokes (front crawl, side stroke, elementary back stroke, and breast stroke). Water safety skills and knowledge are emphasized. (0-30)
- LW 174 Swimming III—Conditioning 1 Sem Hr**  
Prerequisite: LW 173. This course will acquaint the student with the basic principles of cardiovascular fitness and strength in order to increase these components of fitness through swimming. (0-30)
- LW 176 Lifeguarding 1 Sem Hr**  
Prerequisite: Skill and knowledge of the five basic strokes. The American Red Cross units and progressions will be followed. Successful completion of all the lifesaving and water safety requirements will result in certification. (0-30)
- LW 178 Scuba Diving I 1 Sem Hr**  
Prerequisite: ability to swim. Techniques and information regarding use of self-contained underwater breathing apparatus including mask, fins, and snorkel. Includes classroom lecture, demonstration and pool dives. Students will be required to purchase a mask and snorkel plus pay an equipment fee as per guidelines given during first class session. (0-30)
- LW 179 Scuba Diving II 1 Sem Hr**  
Prerequisite: LW 178 or instructor's permission. Information, techniques, and practice in the use of self-contained underwater breathing apparatus for open water diving. Procedures covering dressing, equipment, buoyancy, kicks, descents, ascents, and the use of the compass are included. Course necessary for SCUBA certification. (0-30)
- LW 181 Adapted Aquatics Aide 1 Sem Hr**  
Swimming techniques, water exercises, simulation of disabilities, supervised practice teaching, and basic water safety involved with physical and mental impairments. (0-30)
- LW 183 Water Aerobics I 1 Sem Hr**  
Introduces the basic concepts of water resistance and incorporates them into an individual fitness program that promotes strength, flexibility, and aerobic capacity. Swimming skills not required. (0-30)
- LW 185 Water Safety Instructor 1 Sem Hr**  
Prerequisite: Current American Red Cross Emergency Water Safety or Lifeguard Card and swimmer level skills. Instructional methods and techniques in aquatics, practice teaching, water safety, survival swimming, swimming program development and pool and waterfront administration. Satisfactory completion of the course may result in certification as a Water Safety Instructor. (0-30)
- LW 188 Skiing I 1 Sem Hr**  
Emphasis is placed on the fundamental skills. The student will be taught gliding wedge, wedge turn, traversing and stem turn. Student must furnish or rent equipment and pay skiing charges. (0-30)
- LW 189 Skiing II 1 Sem Hr**  
Prerequisite: LW 188 or equivalent skill level. Student will begin the transition from steered turn to sliding turn. Side slipping, uphill christie and stem christie will be taught. Student must furnish or rent equipment and pay skiing charges. (0-30)
- LW 190 Skiing III 1 Sem Hr**  
Prerequisite: LW 189 or equivalent skill level. Provides continued practice on the finer points of parallel skiing. Emphasizes parallel christie, parallel with check, and short swing. Student must furnish or rent equipment and pay skiing charges. (0-30)
- LW 192 Cross Country Skiing 1 Sem Hr**  
Emphasis is placed on fundamentals in cross country skiing. Students will be taught selection and care of equipment, rudimentary ski movements, step turn, moving ahead over snow, controlling speed, half plow turn, poling, moving step and moving step turn, kick turn, skiing uphill, and waxing for various temperatures. Student must furnish own equipment and pay any special fees. (0-30)
- LW 193 Fitness Skating 1 Sem Hr**  
Emphasizes inline skating to address the five components of physical fitness. Employs aerobic activities involving a wide range of training principles such as pacing, endurance weight training, calisthenics, and stretching to provide a complete fitness program. Students should be able to inline skate. (15-15)
- LW 194 Snowboarding 1 Sem Hr**  
Introduces the fundamentals of snowboarding including the basics of skating, climbing, gliding, and turning and stopping. Emphasizes board and speed control through the use of side slipping, traversing, and garland turns. Student must provide or rent snowboard and pay for lift ticket. (0-30)
- LW 201 Fencing I 1 Sem Hr**  
An introduction to foil fencing, its basic fundamentals, techniques, rules and safety measures. (0-30)
- LW 202 Fencing II 1 Sem Hr**  
Prerequisite: LW 201 or permission of instructor. Designed to further refine the basic fundamentals and the opportunity to expand knowledge and improve skills. Advance strategies included are: compound attacks and compound returns, false attacks on preparation and counter attacks. (0-30)
- LW 203 Jogging 1 Sem Hr**  
Develops an understanding of methods to obtain or improve current levels of health or conditioning. Emphasizes the cardiorespiratory component of physical fitness, with a secondary emphasis placed on the remaining four components of fitness. Employs aerobic endurance activities involving training techniques, skilled pacing, weights, calisthenics, proper stretching and nutritional information to provide a complete exercise program. Involves evaluation of pre-and post test assessment of the five components of physical fitness (cardiorespiratory fitness, muscular strength, endurance, flexibility, body composition) within this course. (15-15)
- LW 203 Jogging 1 Sem Hr**  
Develops and understanding of methods to obtain or improve current levels of health or conditioning. Emphasizes the cardiorespiratory component of physical fitness, with a secondary emphasis placed on the remaining four components of fitness. Employs aerobic endurance activities involving training techniques, skilled pacing, weights, calisthenics, proper stretching and nutritional information to provide a complete exercise program. Involves evaluation of pre- and post-test assessment of the five components of physical fitness (cardiorespiratory fitness, muscular strength, endurance, flexibility, body composition) with this course. (15-15)
- LW 204 Bicycling 1 Sem Hr**  
Emphasis is placed on the fundamentals of cycling. Will cover selection and maintenance of equipment, gearing, pedaling, the techniques of shifting. Inherent in this activity will be physical conditioning to successfully complete the course. Student must furnish own bicycle. (0-30)
- LW 206A Occupational Wellness 1 Sem Hr**  
Prerequisite: Admission to RAD or NUR programs. Introduces wellness concepts, behavioral patterns, and activities that can be incorporated into the lifestyles of those working in a wide variety of health occupational settings. (15-0)
- LW 206B Occupational Wellness 2 .5 Sem Hrs**  
Prerequisite: Admission to DH, DMS, PTA or RAD program. Continues wellness concepts, behavioral patterns, and activities that can be incorporated into the lifestyles of those working in a wide variety of health occupational settings. (15-0)
- LW 206C Occupational Wellness 3 .5 Sem Hrs**  
Prerequisite: Admission to DH, DMS, PTA or RAD program. Continues wellness concepts, behavioral patterns, and activities that can be incorporated into the lifestyles of those working in a wide variety of health occupational settings. (15-0)



**LW 209 Canoeing I** **1 Sem Hr**  
Instruction in the basic paddling strokes and maneuvering techniques, methods of canoe transportation, launching, and boarding and canoe rescue. Involves on-campus classroom sessions and a weekend at a lake or river in Northern Michigan. Student must pay own expenses, canoe rental, food and transportation. (0-30)

**LW 211 River Canoeing/Camping** **1 Sem Hr**  
Review of basic paddling techniques and instruction in advanced paddling techniques, plus care and repair of equipment. There will also be a review of first aid techniques, canoe transport launching and preparing for a two or three day river canoeing/camping experience. The student is expected to have basic swimming skills. The class involves on-campus classroom/pool sessions and on river canoeing and camping. Students must pay their own expenses, canoe rental, food and transportation. (0-30)

**LW 213 Backpacking I** **1 Sem Hr**  
To develop an understanding of and proficiency in the theory and techniques of backpacking. Primary emphasis will be directed to equipment selection, planning a camping trip, menu selection and outdoor cooking, safety, knot tying, and the sound use of conservation practices in the outdoors. These skills will be applied during an off campus weekend field trip normally. Students must pay own expenses. (0-30)

**LW 215 Sailing** **1 Sem Hr**  
Basic theory, skill and techniques in small boat sailing, i.e., sailboat safety, nomenclature, knot tying, helmsman ship, sail handling, jibbing and coming about, docking under sail. A fee is charged for boat rental. (0-30)

**LW 217 Rowing** **1 Sem Hr**  
Prerequisite: Ability to swim. Explanation, demonstration, and practice in the basic techniques, equipment, and safety needed in rowing. Instruction and rowing will take place at the Rowing Club facilities in Bay City. Additional lab fee required. (0-30)

**LW 220 Lifelong Wellness** **1 Sem Hr**  
Promotes student understanding and experience of the direct correlation between positive lifestyle habits and well being through a series of classroom lectures that cover a variety of wellness topics and disease prevention. (15-0)

**LW 230 Theory of Strength Training** **2 Sem Hrs**  
Exposes students to all strength training principles, equipment, exercises, and specific program development. Individual pre- and post-assessment, as well as program development will be analyzed. (30-0)

**LW 280 Self-Defense/Fitness** **2 Sem Hrs**  
Prerequisite: permission of instructor. Concurrent enrollment in CJ 101, LW 175, and OAT153 for Basic Police Training Academy. Teaches methods of self-defense using pressure points and leverage for subject control. Emphasizes subduing dangerous or violent individuals for criminal justice purposes. Fitness module emphasizes regular program of calisthenics, stretching, strength building, and conditioning through aerobic and non-aerobic activities. Grade of "C" (2.0) or better in this course in order to complete Basic Police Training Academy. (0-60)

#### **LW 290-299 Special Projects in Lifelong Wellness**

### **LIFELONG WELLNESS THEORY COURSES**

**LWT 165 Community First Aid** **1 Sem Hr**  
Introduction to basic first aid skills. Necessary as the primary link in the Emergency Medical Services system. Adult CPR certification may be received. (15-0)

**LWT 170 Cardiopulmonary Resuscitation** **1 Sem Hr**  
Development of cardiopulmonary resuscitation (CPR) knowledge and skills to a degree that an individual could meet the needs of most situations in which emergency first aid care of CPR is required. (15-0)

**LWT 175 Advanced First Aid and Emergency Care** **3 Sem Hrs**  
Prerequisite: permission of instructor. CJ 101, LW 201, and OSE 153 must be taken concurrently for Basic Police Training Academy. Provides knowledge and practical skills necessary to assist victims of injury or sudden illness. Covers CPR, wounds, choking, poisoning, substance abuse, burns, exposure to heat and cold, emergency childbirth, fractures, stroke, convulsive disorders, diabetes, auto and pool extrication. Successful completion of course entitles student to American Red Cross CPR and Advanced First Aid Certifications. Grade of "C" (2.0) or better in this course in order to complete Basic Police Training Academy. (45-15)

**LWT 180 Responding to Emergencies** **2 Sem Hrs**  
Prepares individuals to make appropriate decisions regarding advanced first aid and life threatening emergencies, and how to respond and provide care until more advanced medical attention arrives. Successful completion results in American Red Cross certification. (30-0)

**LWT 210 Nutrition: The Science of Optimal Living** **3 Sem Hrs**  
Presents nutrition science as a key element for optimal living. Plans diet, principles, food nutrients, metabolism, diet analysis, and the health effects of nutrition will all be evaluated and applied. (45-0)

**LWT 212 Introduction to Meditation** **1 Sem Hr**  
Provides an overview of the history and purpose of meditation. Introduces students to the practice of various meditation techniques. Emphasizes the role of meditation for concentration, relaxation, stress relief, and personal and spiritual growth. (15-0)

**LWT 215 Theory of Healing With Humor** **1 Sem Hr**  
Provides an overview of the social, emotional, and physiological changes that occur in the human body with humor. Presents theory and application of the use of humor to prevent, decrease, and survive the ever increasing levels of stress in our lives. (15-0)

**LWT 230 Theory of Strength Training** **2 Sem Hrs**  
Exposes students to all strength training principles, equipment, exercises, and specific program development. Individual pre- and post-assessment, as well as program development will be analyzed. (30-0)

**LWT 240 Health Fitness Instructor** **4 Sem Hrs**  
Prerequisites: BIO 131, BIO 132, LW 220. Emphasizes skills in risk factor identification, health/fitness appraisal, exercise prescription, quantifying the energy cost of work (physical activity), effective educational communication, identifying physiological and psychological responses to exercise, lifestyle behavior modification, and the administration of health/fitness programs to obtain certification by recognized agencies. (60-0)

**LWT 241 Personal Trainer** **4 Sem Hrs**  
Prerequisites: BIO 101, 111 or BIO 130. Introduces the skills and knowledge needed to become a certified personal trainer. Covers how to screen and evaluate prospective clients, design safe and effective exercise programs, instruct clients in correct exercise technique to avoid and prevent injury. Includes self employment issues as well as legal issues. (60-0)

**LWT 242 Aerobic Instructor** **4 Sem Hrs**  
Prerequisites: BIO 131, LW 220 and concurrent enrollment in one of the following: LW 151, LW 153, LW 155, or LW 157. Introduces the skills and knowledge needed to become a certified aerobic instructor. Includes how to screen and evaluate prospective clients, design safe and effective exercise programs, instruct clients in correct exercise techniques to avoid injury, and respond to the typical questions and problem that arise in a group exercise setting. (60-0)

**LWT 251 Exercise Physiology** **4 Sem Hrs**  
Prerequisites: BIO 131, BIO 132, and LW 220. Emphasizes the physiological responses of the human body to acute and chronic bouts of exercise. Presents the study of health/fitness appraisal, exercise prescription, quantifying the energy cost of work (physical activity), identifying physiological and psychological responses to exercise, and the administration of exercise programs to diverse populations. Credit may be earned in LWT 251 or BIO 251 but not both. (60-0)



**LWT 255 Health Fitness Management Promotion 3 Sem Hrs**  
Introduces and explores the different and interesting settings in which health and fitness educators practice and the job responsibilities and opportunities within each of those settings. Emphasizes application, skill development, and professional identity and direction in health promotion occupations. (45-0)

**LWT 260 Health Fitness Experience 5 Sem Hrs**  
Prerequisite: LWT 210, LWT 230, LWT 240, LWT 250, and LWT 255. Introduces Health Fitness Education and Promotion students to "on the job" experiences within the Health Promotion field. Includes exercise prescription, health education, health promotion administration and program development in the 300-hour internship experience. Students must have current CPR certification. (9-80)

**LWT 266 Teaching of Elementary Physical Education 3 Sem Hrs**  
For prospective teachers; deals with curriculum development, principles, methods and materials used in conjunction with the teaching of physical education in the elementary schools. (45-0)

**LWT 290-299 Special Projects in Lifelong Wellness Theory**

## MECHANICAL DESIGN AUTOMATION COURSES

**MDA 205 Rapid Prototyping and Manufacturing .6 Sem Hr**  
Prerequisite: MFG 111 and MDA 211. Surveys the time-compression technology and identifies how it is changing the design/manufacturing interface. Covers specific rapid prototyping processes such as stereolithography, selective laser sintering, and fused deposition modeling. Demonstrates the linkage between manufacturing and rapid tooling processes of core and cavity inserts for moldings and castings. (9-0)

**MDA 211 Interactive Part Modeling 2.4 Sem Hrs**  
Prerequisites: DRF 107, MFG 111 and MT 110 or MTH 111. Provides instruction and practice in the varied methods within UNIGRAPHICS software to create, manipulate, store, and display parts and groups of parts. Uses constraint based definition of geometric features as well as traditional methods to make, edit, catalog, and store wire-frame, surface, and solids geometric models. (36-0)

**MDA 290-299 Special Projects in Mechanical Design Automation**

**MDA 305 Design For Assembly 1 Sem Hr**  
Prerequisite: MT 256 or DRF 257. Uses the Boothroyd/Dewhurst Design for Assembly software to redesign a manufactured product. Emphasizes teamwork in a Concurrent Engineering simulation. (15-0)

**MDA 312 Sketch Modeling 2 Sem Hrs**  
Prerequisite: MDA 211. Develops explicit virtual models from approximate geometry. Use previously defined shapes to create, and modify current model. Use dimensions, parameters, and design intent to define, modify and constrain forms, and create 3D solid models. (30-0)

**MDA 313 Product Information Management 2 Sem Hrs**  
Prerequisite: MDA 312. Provides methods for using database within UNIGRAPHICS to create, manipulate, forecast, and document timely controls on work flow. Involves interacting with work flow characteristics and solving work flow problems using IMAN Product Structure, Cascade Release, and Change Management functions. (30-0)

**MDA 315 Unigraphics Design Practice 2 Sem Hrs**  
Prerequisite: MDA 312. Engages the student in two of the three phases of the design process: idea and task statements, and concurrent design refinements. Includes making idea sketches, writing research reports and functional specifications, and using a computer graphic system to make engineering drawings, bill of materials, and a presentation illustration. Produces an original design or design modification. (30-0)

**MDA 321 Advanced Part Modeling 3 Sem Hrs**  
Prerequisite: MDA 211. Uses design intent, parametric applications, part master libraries, and assembly modeling in a second course in parametric solid modeling techniques. (45-0)

**MDA 323 Free Form Modeling 3 Sem Hrs**  
Prerequisite: MDA 321. Defines contoured free-form shapes (non-prismatic) using UNIGRAPHICS. Includes model creation and edit methods such as spline, surface, solids, parametric, and retrofit techniques. Includes curvature analysis, irregularity detection and correction, and suitability for manufacture considerations. (45-0)

**MDA 325 Assembly Modeling 3 Sem Hrs**  
Prerequisite: MDA 211. Provides instruction and practice with Unigraphics part drafting and assembly working drawing techniques. Uses 3-D prismatic and free-form models as the basis of parts to be transformed into orthographic, section, and auxiliary views which are then ANSI annotated with appropriate dimensions, tolerancing symbols, and text. Produces an original multi-sheet working drawing to include: detail, assembly, part list, and exploded pictorial assembly. (45-0)

**MDA 327 Design Drafting 3 Sem Hrs**  
Prerequisite: MDA 211. Provides instruction and practice with solids modeling part drafting and assembly working drawing techniques. Uses 3-D prismatic and free-form models at the basis of parts to be transformed into orthographic, section, and auxiliary views, which are then ANSI annotated with appropriate dimensions, tolerancing symbols, and text. Produces an original multi-sheet working drawing to include: detail, assembly, part list, and exploded pictorial assembly. (45-0)

## MANUFACTURING TECHNOLOGY COURSES

**MFG 111 Manufacturing Processes 3 Sem Hrs**  
Teaches the fundamentals of engineering materials and manufacturing processes, and how they interrelate in the design of products. (45-0)

**MFG 113 Lean Organizational Management 1 Sem Hrs**  
Explores the principles of Lean as a method of organizational management. Emphasizes the concepts of value stream analysis, one piece flow, standardized work, quality, visual controls, Just-In-Time, and teamwork as they are applied in an organization. Identifies methods for resource allocation. (15-0)

**MFG 114 Lean Organizational Practices I 1 Sem Hrs**  
Prerequisite: MFG 113. Describes the principles of lean and identifies practices required to achieve their application in an organization. Emphasizes the techniques used to achieve Just-In-Time or Pull systems, 5-S, material handling and visual controls. (15-0)

**MFG 115 Lean Organizational Practices II 1 Sem Hr**  
Prerequisite: MFG 113. Describes the principles of lean and identifies practices required to achieve their application in an organization. Emphasizes the techniques used to achieve quality, cost, and delivery goals such as standardized work, continuous improvement, and teamwork. Discusses the roles and responsibilities of people in the organization for achieving lean management. (15-0)

**MFG 212 Manufacturing Cell 2 Sem Hrs**  
Introduces the manufacturing cell as it relates to the workplace. Teaches various cell information, i.e. tooling, material handling, layout, etc. (30-0)

**MFG 230 Plastics Technology 3 Sem Hrs**  
Introduces the manufacturing technician, supervisor, or engineer to plastic materials and the corresponding conversion technologies. Defines the processing, material selection and testing of common industrial polymers. Class requires five 4-hour sessions at the plastics lab at Central Michigan University. (30-20)

**MFG 231 Plastic Part Design & Processing 3 Sem Hrs**  
Prerequisite: MFG 230. Builds fundamental skills in plastic design. Focuses on the design aspects of injection molded thermoplastic parts including blow molding and thermoforming. Explores the interrelationships between material, processing and tooling while maintaining profitability. (45-0)

**MFG 290-299 Special Projects in Manufacturing Technology**





## MANAGEMENT COURSES

- MGT 110 Business Mathematics** **3 Sem Hrs**  
Prerequisite: MTH 096 if mathematics placement test score unsatisfactory. Covers principles necessary for an understanding of math of the business world. Includes various methods of computing interest and bank discounts; installment buying; F.I.C.A. Federal Income Taxes and other payroll deductions; markup, cost and selling prices; various wage payment systems; sales and property taxes; insurance; measures of central tendency; and an introduction to the metric system. Credit may be earned in MGT 110 or GB 110 but not in both. (45-0)
- MGT 131 Small Business Management I** **3 Sem Hrs**  
Overview of small business, what is necessary to start a small business, including: small business in free enterprise, the entrepreneur, opportunities and trends, business plan, legal aspects, location, financing, organizational planning and marketing. Helpful to those who are currently operating a small business. Case studies will be used throughout the course. Credit may be earned in GB 131 or MGT 131 but not in both. (45-0)
- MGT 132 Small Business Management II** **3 Sem Hrs**  
Strengthens the entrepreneurial and management skills of those who are already in (or who may enter) business for themselves. Small business case studies are used extensively. Credit may be earned in GB 132 or MGT 132 but not in both. (45-0)
- MGT 143 Principles of Advertising** **3 Sem Hrs**  
Provides a broad view of advertising from the marketing and consumer point of view. Historical background, economic and social aspects, roles of advertising, advertising stages, target marketing, media, using selected behavioral science information in advertising, and obtaining proper advertising appeal are included. Credit may be earned in GB 143 or MGT 143 but not in both. (45-0)
- MGT 145 Principles of Sales** **3 Sem Hrs**  
Emphasizes the marketing concept and the importance of personal selling for those engaged in the marketing of products, services or ideas. Includes an analysis of the steps in a sales proposal. Classroom presentations by students required. Credit may be earned in GB 145 or MGT 145 but not in both. (45-0)
- MGT 151 Merchandising Display** **3 Sem Hrs**  
Explores display as a major component of sales promotion. Studies color and basic design principles in terms of their application to display. Analyzes functions, types, and tools of display. Designs and coordinates windows and interior displays. Covers steps in planning and coordination sales promotions. Emphasizes planning, producing and evaluating effective visual displays. Credit may be earned in only one of the following: FM 151, GB 151 or MGT 151. (45-0)
- MGT 152 Textiles** **3 Sem Hrs**  
Studies natural and man-made fibers, their properties and unique characteristics. Identifies fabrics used in wearing apparel and interior design; fabric production, performance and use; final processes and finishes; the study of weaves, pattern and color. Credit may be earned in only one of the following: FM 155, GB 152 or MGT 152. (45-0)
- MGT 153/153H Introduction to Business** **3 Sem Hrs**  
Clarifies the role of business in modern society both domestic and international. Includes an overview of the American business environment, forms of business ownership, obtaining and managing financial resources, management of organizations and human resources, and current issues in the free enterprise system. Credit may be earned in GB 153 or MGT 153 but not in both. (45-0)
- MGT 157 Principles of Merchandising** **3 Sem Hrs**  
Studies merchandising, with an emphasis on contemporary designers and issues. Explores primary secondary, and consumer markets. Discusses merchandise characteristics, planning and profitability. Addresses technology in the merchandising environment. Credit may be earned in only one of the following: FM 170, GB 157 or MGT 157. (45-0)

- MGT 191 Quality Teamwork** **1 Sem Hr**  
Builds the student's ability to respond to the needs of groups as a team member and a team leader. Studies team structures, roles of team members, and tools used in facilitating teams that contribute to organizational quality. Provides opportunities to model effective team operations. Credit may be earned in only one of the following: QA 191, GB 191 or MGT 191. (15-0)

- MGT 203 Business Ethics** **3 Sem Hrs**  
A study of basic ethical concepts such as dignity, privacy, manipulation and rights and serves as a foundation for analysis of ethical conflict situations arising specifically in a business environment. Designed to reinforce the ability to make cogent, well-reasoned decisions in the context of ethical dilemmas surrounding such topics as advertising, consumer rights, employee motivation, loyalty, whistle blowing, and the environment. Credit may be earned in only one of the following: GB 203, PHL 203 or MGT 203. (45-0)

- MGT 204 American Business History** **2 Sem Hrs**  
Covers the period from early colonial to modern times. Emphasis will be placed upon the religious, social, political and economic forces that have shaped the unique character of American business. Major focus will be upon late nineteenth century and modern times with emphasis on industrial growth, business consolidation, the anti-trust movement and the effects of the Depression and New Deal on business. This course may also be taken as HIS 204. Credit may be earned in only one of the following: MGT 204, GB 204, MGT 205, GB 205, HIS 204, HIS 205. (30-0)

- MGT 205 American Business History/With Project** **3 Sem Hrs**  
Covers the period from early colonial to modern times. Emphasis will be placed upon the religious, social, political, and economic forces that have shaped the unique character of American business. Major focus will be upon late nineteenth century and modern times with emphasis on industrial growth, business consolidation, and anti-trust movement, and the effects of the Depression and New Deal on business. The students will be required to complete a major paper or project. This course may also be taken as HIS 205. Credit may be earned in only one of the following: MGT 204, GB 204, MGT 205, GB 205, HIS 204, HIS 205. (45-0)

- MGT 243 Principles of Marketing** **3 Sem Hrs**  
Prerequisite: MGT 153 or GB 153 is recommended. Provides an understanding and interpretation of the marketing system and its importance in the economy and the place of the marketing function in business management. The marketing framework is established and a basic understanding of the psychological, environmental, and managerial functions and processes that are employed in contemporary marketing are presented. Credit may be earned in GB 243 or MGT 243 but not in both. (45-0)

- MGT 245 Principles of Management** **3 Sem Hrs**  
Prerequisite: MGT 153 or GB 153 is recommended. Theories of management practices will be discussed and fundamentals of administrative, executive, and staff management explained. Emphasis is placed on discussion of the management functions of planning, organizing, directing, controlling, as well as preparation of information required for decision making. The analysis of management problems and the synthesis of solutions will be covered. Credit may be earned in GB 245 or MGT 245 but not in both. (45-0)

- MGT 246 Supervision** **3 Sem Hrs**  
A review of the main management concepts, and a discussion of what a supervisor is and does. Emphasis placed on what makes an effective, efficient supervisor; techniques used by supervisors in problem solving will also be discussed. Leadership, time management, hiring, evaluation, discipline, and health and safety will be presented. Role plays will be utilized. Credit may be earned in GB 246 or MGT 246 but not in both. (45-0)



**MGT 247 Principles of Retailing****3 Sem Hrs**

Prerequisite: MGT 153 or GB 153 is recommended. Store location, organization structure, and retail personnel management are discussed in detail. Merchandising policies and budgets, and buying and pricing merchandise are presented. Retail advertising, personal selling, customer services, and loss prevention are also presented in some detail. The scope of the retailing industry, requirement of retail management as well as careers in retailing are discussed in the course. Credit may be earned in GB 247 or MGT 247, but not in both. (45-0)

**MGT 248 Principles of Buying for Resale****3 Sem Hrs**

Prerequisite: MGT 247 or GB 247 is recommended. The buying function in retailing and wholesaling will be explored in depth. The principles of foreign and domestic vendor location and the legality and ethics in the buyer-vendor relationship are covered. The factors determining merchandise selection, including consumer analysis, building model stocks, and estimating sales potential will be studied. Merchandising expense control factors, manual and computer inventory control systems, as they relate to buying, will be studied. Credit may be earned in GB248 or MGT248, but not in both. (45-0)

**MGT 251 Business Law I****3 Sem Hrs**

This course provides a comprehensive study of both state and federal court systems, and the relationships of the participants in a lawsuit, including judges, juries, litigants, witnesses and attorneys. Particular areas of business law that are studied in the context noted above include tort law, contract law, agency law, and the law of personal property and bailments. Credit may be earned in GB 251 or MGT 251, but not in both. (45-0)

**MGT 252 Business Law II****3 Sem Hrs**

Prerequisite: MGT 251 or GB 251 or permission of instructor. This course provides a continued study of court systems, with emphasis in specialized areas of business law including sales law, commercial paper law, secured transactions and bankruptcy law, real property law and corporation law. The Uniform Commercial Code and recent consumer protection legislation are stressed. Credit may be earned in GB 252 or MGT 252 but not in both. (45-0)

**MGT 254 Applied Merchandising and Promotional Strategies****3 Sem Hrs**

Prerequisite: GB243 or MGT243 and FM 170 or GB157 or MGT 157. Uses case studies and real life experiences to make strategic marketing decisions. Includes situation analysis, segmentation, positioning market research and information systems, international marketing, and product, price, distribution and promotion strategies. Introduces actual development and implementation of a marketing plan and budget. Uses practical experience in preparing and giving several types of presentations to live audiences. Credit may be earned in only one of the following: MGT 254, FM 240 or GB 240. (45-0)

**MGT 256 Human Resources Management I****3 Sem Hrs**

Prerequisite: MGT 153 or GB 153 is recommended. Development of human resources management; the environment in which human resources management must operate; contemporary legal guidelines; human resource planning and recruitment; developing effectiveness in human resources through training, development, and appraisal; and creating a productive work environment through motivation, communication, leading and directing. Credit may be earned in GB 256 or MGT 256 but not in both. (45-0)

**MGT 257 Human Resources Management II****3 Sem Hrs**

Prerequisite: MGT 256 or GB 256 or permission of instructor. The fostering of employee-management relationships; dynamics of labor relations; collective bargaining; disciplinary action; compensation management; incentive compensation; employee benefits; safety and health; auditing the Human Resources Management program; and international Human Resources Management will be covered. Credit may be earned in GB 257 or MGT 257 but not in both. (45-0)

**MGT 265 International Business****3 Sem Hrs**

Prerequisite: MGT 153 or GB 153 is recommended. An examination of the three environments within which the typical business person must function in a global economy: domestic, foreign and international. The international organizations (i.e., GATT, IMF, OPEC, EC and the UN) and the international monetary system will be covered. Physical, sociocultural, political, legal, labor and financial forces in global markets will be analyzed. Case studies will be used to emphasize management decision making in marketing, production, financing and staffing in world-wide companies. Credit may be earned in GB265 or MGT265 but not in both. (45-0)

**MGT 268 International Studies in Business****1-4 Sem Hrs**

An analysis of foreign business including its: service industries; approaches to marketing and advertising; facilities for mass transportation; impacts of trading unions such as the European Economic Community and other elements of foreign and international trade. Includes field study, classroom lectures, and individual consultation with the faculty sponsor. Expenses for field study must be paid by the student. By prior arrangement with appropriate faculty, students may also take International Studies in the following disciplines: GEO 268, ECN 268, SOC 268. Credit may be earned in GB 268 or MGT 268 but not in both. (60-0)

**MGT 274 Computer Aided Decisions****2 Sem Hrs**

Prerequisites: CST 133 or CIS 133 and MGT 243 or GB 243 or MGT 245 or GB 245. Practices the strategic decision making process in management/marketing within an interactive business simulation class using the IBM or compatible microcomputer. Explores the use of microcomputer application software in the area of decision support. Topics include modeling, simulation, query, languages, spreadsheets, and expert systems. Presents strategic decision situations to illustrate techniques utilized for unstructured decision making in the business environment. Credit may be earned in GB 274 or MGT 274 but not in both. (30-0)

**MGT 280 Market Experience New York****2 Sem Hrs**

Prerequisite: Permission of instructor. Studies the New York business market through visits to manufacturers, designers, buyer showrooms, resident buying offices, advertising agencies, retailers, museums, Wall Street, and other places of interest. Students pay tuition plus all their expenses. Credit may be earned in only one of the following: FM 250, GB 280, or MGT 280. (30-0)

**MGT 281 Market Experience Chicago****1 Sem Hr**

Prerequisite: Permission of instructor. Students will study the Chicago market through visits to the Apparel Center, buyers showrooms, resident buying offices, designers, ready-to wear merchants, the Merchantile Exchange, and other areas of interest. Students pay tuition plus all their expenses. Credit may be earned in only one of the following: FM 251, GB 281, or MGT 281. (15-0)

**MGT 290-299 Special Projects in Management****MACHINE TOOL OPERATIONS COURSES****MS 101 Machine Shop I****4 Sem Hrs**

Orients student to the machine tool operation and machining industry. Emphasizes shop and industrial safety. Includes instruction in non-precision, precision measurement and basic layout. (0-100)

**MS 102 Machine Shop II****4 Sem Hrs**

Prerequisite: MS 101. Designed to develop skills in using basic hand tools, selecting speeds and feeds on metal cutting machines, and selecting and applying cutting fluids. Basic instruction in the operation of metal saws is included. (0-100)

**MS 103 Machine Shop III****4 Sem Hrs**

Prerequisite: MS 101. Designed to provide basics of engine Lathe operation including; turning, facing, boring, and threading with emphasis on machine operations. (0-100)



**MS 104 Machine Shop IV** 4 Sem Hrs  
Prerequisite: MS 101. The set-up and operation of a vertical and horizontal milling machine with emphasis on safety, cutter selection and accuracy. (0-100)

**MS 105 Machine Shop V** 4 Sem Hrs  
Prerequisite: MS 101. The set-up and operation of sensitive, upright and radial arm drilling machines. Selection and use of carbide tooling also covered. (0-100)

**MS 106 Machine Shop VI** 4 Sem Hrs  
Prerequisite: MS 101. The operation and set-up of surface grinders and drill grinding machines. Grinding wheel selection and safety also included. (0-100)

**MS 107 Machine Shop VII** 4 Sem Hrs  
Prerequisite: MS 101 and 103. Advanced engine lathe operations including form turning, acme threading, internal threading and faceplate set-up. (0-100)

**MS 108 Machine Shop VIII** 4 Sem Hrs  
Prerequisite: MS 101, 102 and 106. Set-up and operation of the tool and cutter grinder, cylindrical grinder and internal grinder. Emphasis on close tolerance control. (0-100)

**MS 109 Machine Shop IX** 4 Sem Hrs  
Prerequisite: MS 101. Application of advanced measurement and inspection techniques using electronic equipment and gage blocks. Covers both linear and angular measurement, basic tool making techniques and advanced milling techniques. (0-100)

**MS 112 Ferrous Heat Treatment** 2 Sem Hrs  
Designed to acquaint students with various forms of heat treatment applied to plain carbon steels, cast iron, alloy tool steels and stainless steel. Course will also include steel classification and machinability. (30-0)

**MS 113 Machining Processes** 2 Sem Hrs  
Course designed to familiarize students not majoring in the machine trade in the use and application of tool room machines. Student gains limited skills in use of lathes, drills, mills, instruments, grinders, and saws. (15-45)

**MS 114 Machine Tools** 3 Sem Hrs  
Introduces the manufacturing facility. Utilizes safety, materials, hand tools, precision instruments, drill presses, lathes, mills, pedestal grinders, and saws. (15-75)

**MS 120 Machinist's Handbook** 2 Sem Hrs  
Emphasis on locating and applying information found in the Machinery Handbook. The use of mathematical formulae and tables will be covered. (30-0)

**MS 210 Machine Shop X** 4 Sem Hrs  
Prerequisites: MS 102, MS 104 and MS 109. The operation of the DeVlieg jig mill including: machine set-up, basic operations, operator responsibilities and safety. (0-100)

**MS 211 Machine Shop XI** 4 Sem Hrs  
Prerequisite: MS 210. The operation of the Anilam Commando control in conjunction with the DeVlieg jig mill including: basic features, programming, and programmed machining using all available features. (0-100)

**MS 212 Machine Shop XII** 4 Sem Hrs  
Prerequisites: MS 106 and 108, or Permission of instructor. The operation of the Moore jig grinder including: safety, operator responsibilities, hole grinding, radius grinding and bottom grinding. (0-100)

**MS 290-299 Special Projects in Machine Tool Operations**

## MECHANICAL TECHNOLOGY COURSES

**MT 110 Machine Tool Calculations** 4 Sem Hrs  
Satisfies the mathematical needs of tradespeople and technicians in the machine tool and drafting fields. Covers whole numbers, fractions, decimals, metric conversions, precision instruments, ratio and percent, algebra, applied geometry, shop trigonometry, tapers, gears, belt and chain speeds, cutting speeds, and screw threads. (60-0)

**MT 150 Mechanical Principles in Electronic Design** 2 Sem Hrs  
Prerequisites: MTH 113 and PHY 101 or 111. Investigates the application of mechanical, fluid and thermal principles to the electronics industry. Through demonstrations, becomes familiar with machine and mechanical drive elements, dynamics and vibrations, material properties, instrumentation, hydraulics and pneumatics, and heat transfer and thermal expansion. (30-15)

**MT 220 Introduction to Fluid Power** 3 Sem Hrs  
Prerequisite: MTH 111 or MTH 119. Focuses on the operation and function of fluids, pumps, compressors, valves, cylinders, motors, filters, and other components used in the power and control of machine tools, construction and agricultural equipment. Uses algebraic formulas, charts, and graphic symbols for design and diagnosis of basic circuits. (30-30)

**MT 221 Materials and Metallurgy** 3 Sem Hrs  
Prerequisites: MFG 111 and MTH 111 or higher. Introduces concepts necessary to the selection and specification of materials for making products and building structures. Presents and practices standard methods to characterize the physical and mechanical properties of metals, ceramics, polymers, and composite materials. Includes laboratory activities such as hardness testing, microscopy, heat treatments, phase transformation studies, and mechanical property measurements. (30-30)

**MT 244 Mechanisms** 2 Sem Hrs  
Prerequisites: DRF 107 and PHY 111. Uses hand calculator, graphical and computer methods, to study mechanical motion concepts by calculating displacements, velocities and accelerations. Develops proficiency in the use of terminology; vectors; kinematic drawings; displacement drawings; displacement graphs; centros; displacement, velocity and acceleration analysis and cam motion calculations. Credit may be earned in MT 244 or MT 255 but not in both. (20-20)

**MT 250 Statics and Strength of Materials** 3 Sem Hrs  
Prerequisites: PHY 101 and MTH 103. Studies forces acting on rigid bodies, including applications of these forces to practical design problems. Introduces and uses concepts of stress in tension, compression, torsion, and shear in various combinations. (45-0)

**MT 251 Statics and Dynamics** 3 Sem Hrs  
Prerequisites: PHY 111 and MTH 113. Studies statics and dynamics of mechanical systems by solving problems of small sub-systems using a calculator. Studies forced in 2-D and 3-D acting on particle systems and rigid bodies. Solves problems using the following concepts: equilibrium laws, centroids, center of gravity, moment of inertia. Uses 3 methods to study dynamics of motion - kinematics, work/energy and impulse/momentum. (45-0)

**MT 252 Strength of Materials** 3 Sem Hrs  
Prerequisites: MT 251 and ENG 113 or permission of instructor. Uses mathematical and computer methods, as well as Mohr's circle to determine stress, strain, load and deflection relationships for structure and machine elements. Uses machine components in tension, compression or shear, beams in bending or deflection, columns, and welded and riveted joints in design calculations. (30-30)

**MT 255 Kinematics of Mechanisms** 3 Sem Hrs  
Prerequisites: DRF 107 and PHY 111. Uses hand calculator, graphical and computer methods, to study mechanical motion concepts by calculating displacements, velocities and accelerations. Develops proficiency in the use of terminology; vectors; kinematic drawings; displacement drawings; displacement graphs; centros; displacement, velocity and acceleration analysis, cam motion calculations and diagrams, spur gear set and gear trains. Credit may be earned in MT 244 or MT 255 but not in both. (30-30)



**MT 256 Machine and Product Design 3 Sem Hrs**  
Prerequisites: MT 244 and MT 252. Uses hand calculator and computer methods to solve for the dimensions and allowable loads of machine elements and powertrains. Studies shafts, keyed and bolted couplings, bearings, gear trains, V-belt and chain drives, clutches and brakes, springs and fasteners. Uses Design for Assembly software for final design project. (30-30)

## MT 290-299 Special Projects in Mechanical Technology

### MATHEMATICS COURSES

Course prerequisites are stated in terms of Delta courses or the number of years of high school mathematics, and are intended to insure that students choose the appropriate mathematics course. Individuals may have a mathematics background equivalent to a stated prerequisite in which case they should consult a counselor for assistance in evaluating equivalencies. A grade of "C" or better must be earned in any mathematics course used as a prerequisite for another mathematics course. Any student who feels that circumstances warrant waiving a prerequisite should consult the Mathematics and Computer Science Division for approval.

**MTH 082 Review of Basic Mathematics 1 Sem Hrs**  
Prerequisite: Score on the current College assessment instrument qualifying you for MTH 092 and Division approval required. Designed to refresh knowledge to improve your score on the College Assessment Instrument. Provides opportunities to review arithmetic including the four fundamental operations of whole numbers, fractions, decimals, percentages, ratios, proportions, and applications. Grade will be determined by score when you retake the College assessment instrument. Does not earn credit toward graduation. (15-0)

**MTH 086 Review of Pre-Algebra 1 Sem Hrs**  
Prerequisite: Score on the current College assessment instrument qualifying you for MTH 096 and Division approval required. Designed to refresh pre-algebra knowledge to improve your score on the College assessment instrument. Provides opportunities to review topics in preparation for algebra including fractions, decimals, integers, ratios, percentages along with the preliminary topics related to equations, graphs, and functions. Your grade will be determined by your score when you retake the College assessment instrument. Does not earn credit toward graduation. (15-0)

**MTH 087 Review of Algebra I 1 Sem Hrs**  
Prerequisite: Score on the current College assessment instrument that qualifies you for MTH 097 and Division approval required. Designed to refresh algebra knowledge to improve your score on the College assessment instrument. Provides opportunities to review natural numbers, integers, first-degree equations and inequalities, special projects, factoring, rational expressions and equations, graphs, and linear systems, exponents, and quadratic equations. Your grade will be determined by your score when you retake the College assessment instrument. Does not earn credit toward graduation. (15-0)

**MTH 092 Basic Math 2 Sem Hrs**  
Prerequisite: An acceptable score on the current College assessment instrument. Provides a foundation in arithmetic. Covers four fundamental operations of whole numbers, fractions, and decimals. Includes percentages, ratios, proportions, and applications. This course was previously MTH 102. Credit does not count towards graduation. You may receive credit in either MTH 102 or MTH 092, but not in both. (30-0)

**MTH 096 Pre-Algebra 2 Sem Hrs**  
Prerequisite: MTH 092 with a grade of "C" or better or an acceptable score on the current College assessment instrument. Provides preparation for algebra. Includes fractions, decimals, integers, ratios, and percentages with an introduction to equations, graphs, and functions. This course was previously MTH 106. Credit does not count towards graduation. You may receive credit in MTH 106 or MTH 096, but not both. (30-0)

**MTH 097 Algebra I 3 Sem Hrs**  
Prerequisite: MTH 096 with a grade of "C" or better or an acceptable score on the current College assessment instrument. Includes natural numbers, integers, first-degree equations and inequalities, special projects, factoring, rational expressions and equations, graphs, and linear systems, exponents, and quadratic equations. Credit does not count towards graduation. This course was previously MTH 107. You may receive credit in MTH 107 or MTH 097, but not in both. (Equivalent to first-year high school algebra). (45-0)

**MTH 103 Applied Geometry and Trigonometry 4 Sem Hrs**  
Prerequisite: MTH 097 or SKMA 102 with a "C" or better or an acceptable score on the current college assessment instrument. Includes the following geometry topics: angles, triangles, polygons, circles, prisms, cylinders, and cones. Includes right-triangle trigonometry, radian measure, oblique-triangle trigonometry, and graphs of trigonometric functions. Credit may be earned in MTH 103 or SKMA 103, but not both. (60-0)

**MTH 110 Mathematics for Elementary Teachers 4 Sem Hrs**  
Prerequisite: MTH 097 with a "C" or better or an acceptable score on the current college assessment instrument. Includes numeration systems, sets and their properties, classification of number systems (whole numbers through real numbers), operations and their properties, arithmetical algorithms, problem solving, statistical charts and graphs, geometric figures and their calculations, and measurement systems including metric. Uses a variety of learning styles, manipulatives, and calculator and computer application uses. The National Council of Teachers of Mathematics Standards are incorporated. (60-0)

**MTH 113 Applied Trigonometry 4 Sem Hrs**  
Prerequisite: MTH 119 or MTH 119A with a grade of "C" or better or two years of high school algebra. Recommended: A grade of "B" or better in MTH 119 or MTH 119A. Application oriented for the technical student. Includes trigonometric functions with their graphs, solution of triangles, vectors, complex numbers, conics, inverse trigonometric functions, and trigonometric identities and equations. A GRAPHING CALCULATOR IS REQUIRED. (60-0)

**MTH 116 Mathematics for Elementary Teachers II 3 Sem Hrs**  
Prerequisite: MTH 110 with a grade of "C" or better. Investigates problem solving, statistical charts and graphs, geometric figures and properties, and measurement systems including metric. Reviews fractions, decimals, percents, real numbers, their operations and properties. Reviews algebra of lines and equations. Includes a variety of learning styles using manipulatives, calculators and computer application. The National Council of Teachers of Mathematics Standards are incorporated. (45-0)

**MTH 117 Math for Allied Health 2 Sem Hrs**  
Prerequisite: MTH 096 with a grade of "C" or better or an acceptable score on the current college assessment instrument. Reviews (very briefly) fractions, decimals, percentages, and proportions. Includes a study of the metric system and the household system with applications in converting from one system to another. Emphasizes applications including those involved in giving medications and in finding times and various rates for intravenous feedings. (30-0)

**MTH 119 Intermediate Algebra 4 Sem Hrs**  
Prerequisite: MTH 097 with a grade of "C" or better or an acceptable score on the current college assessment instrument. Recommended: A grade of "B" or better in MTH 097. Includes fundamental concepts of algebra and applications, equation solving, graphs, systems of linear equations, quadratic equations, algebraic fractions, exponents, radicals, functions, and logarithms. Credit may be earned in MTH 119 or MTH 119A, but not both. A GRAPHING CALCULATOR IS REQUIRED. (60-0)

**MTH 119A Intermediate Algebra Extended Hours 4 Sem Hrs**  
Prerequisite: MTH 097 with a grade of "C" or better or an acceptable score on the current college assessment instrument. Same content as MTH 119, but class meets 2 additional contact hours per week to allow 50% more time to review and learn each concept in MTH 119. Credit may be earned in MTH 119 or MTH 119A, but not both. A GRAPHING CALCULATOR IS REQUIRED. (90-0)



**MTH 120 Finite Mathematics** **3 Sem Hrs**  
Prerequisite: MTH 119 or MTH 119A with a grade of "C" or better or two years of high school algebra. Includes topics of mathematical modeling (polynomial and rational functions; their graphs and applications; and arithmetic and geometric progressions) systems of equations and inequalities, linear programming, and an introduction to probability (binomial distributions and graphing qualitative data). Covers computer applications of some topics. A GRAPHING CALCULATOR IS REQUIRED. (Those students planning to take MTH 161 should take MTH 151 rather than MTH 120.) (45-0)

**MTH 121 Plane Trigonometry** **3 Sem Hrs**  
Prerequisite: MTH 119 or MTH 119A with a grade of "C" or better or two years of high school algebra. Includes trigonometric functions and their graphs, solution of triangles, identities, trigonometric equations, inverse trigonometric functions, and complex numbers. A GRAPHING CALCULATOR IS REQUIRED. (45-0)

**MTH 151 Pre-Calculus Mathematics** **4 Sem Hrs**  
Prerequisite: MTH 119 or MTH 119A and MTH 121 with grades of "C" or better or three years of high school college-preparatory mathematics including trigonometry. MTH 121 may be taken concurrently with instructor approval. Designed for students planning to take calculus. Includes a study of the elementary functions, equations and inequalities, systems of equations, review of trigonometry, and analytic geometry. A GRAPHING CALCULATOR IS REQUIRED. (60-0)

**MTH 153 Algebra for Calculus** **3 Sem Hrs**  
Prerequisites: Two years of high school algebra and Permission of the instructor. Provides a review of algebra as related to calculus topics of limits, differentiation, and integration. (45-0)

**MTH 160 Calculus for the Social and Managerial Sciences** **4 Sem Hrs**  
Prerequisite: MTH 120 or 151 with a grade of "C" or better or at least three and a half years of high/school-college preparatory mathematics. Satisfies the mathematics requirements for students majoring in business or social sciences. Covers topics include graphing, differentiation and integration of functions (algebraic, exponential, and logarithmic), and the use of these techniques within business and economic models. A GRAPHING CALCULATOR IS REQUIRED. (60-0)

**MTH 161 Analytic Geometry and Calculus I** **4 Sem Hrs**  
Prerequisite: MTH 151 with a grade of "C" or better or four years of high school college-preparatory mathematics including trigonometry. Includes functions, graphs, limits, continuity, derivatives and their applications, integrals, as well as differentiation and integration of exponential and logarithmic functions. A GRAPHING CALCULATOR IS REQUIRED. (60-0)

**MTH 162 Analytic Geometry and Calculus II** **4 Sem Hrs**  
Prerequisite: MTH 161 with a grade of "C" or better. Includes applications of integrals, integration techniques, limits and indeterminate forms, improper integrals, infinite series, polar coordinates, parametric equations, as well as differentiation and integration of trigonometric and hyperbolic functions. A GRAPHING CALCULATOR IS REQUIRED. (60-0)

**MTH 208 Elementary Statistics** **3 Sem Hrs**  
Prerequisite: MTH 119 or MTH 119A with a grade of "C" or better or two years of high school algebra. Studies statistical concepts including frequency distributions, measures of central tendency and dispersion, probability, confidence intervals, hypotheses testing, linear correlation and regression, chi-square, ANOVA. A SPECIFIC GRAPHING CALCULATOR IS REQUIRED. (45-0)

**MTH 260 Discrete Mathematics** **3 Sem Hrs**  
Prerequisite: MTH 161 with a grade of "C" or better. Introduces discrete mathematics topics for applied mathematics and computer science. Includes Boolean algebra, predicate logic, sets, relations, introduction and recursion, counting theory, graphs and tree. (45-0)

**MTH 261 Analytic Geometry and Calculus III** **4 Sem Hrs**  
Prerequisite: MTH 162 with a grade of "C" or better. Topics include solid analytical geometry, vectors, partial differentiation, multiple integration, line and surface integrals, and Green's and Stoke's theorems. (60-0)

**MTH 263 Introduction to Linear Algebra** **3 Sem Hrs**  
Prerequisite: MTH 261 with a grade of "C" or better. Investigates matrices, determinants, linear systems, vector spaces, linear transformations, eigenvalues, and eigenvectors. (45-0)

**MTH 264 Introduction to Ordinary Differential Equations** **3 Sem Hrs**  
Prerequisite: MTH 261 with a grade of "C" or better. Includes techniques for solving first and higher order linear differential equations, systems of linear differential equations, solutions using power series, and introductions to numerical methods and Laplace transforms. Uses applications in science and engineering throughout the course. (45-0)

**MTH 280-289 Restricted Enrollment Mathematics Courses**  
Courses offered at the request of various groups will enrollment limited to the specific request.

**MTH 290-299 Special Projects in Mathematics**

## MASSAGE THERAPY COURSES

**MTP 301 Manual Techniques I** **6 Sem Hrs**  
Prerequisites: Licensed Practical Nurse or Licensed Registered Nurse through the State of Michigan, or, Graduate of a fully accredited Physical Therapist Assistant Program in the State of Michigan. Out of state applicants must provide confirmation of above requirements. Provides an in-depth view of the history, theory, terminology, physiology, pathology, and basic techniques of both Western and Eastern medical models used during the stages of rehabilitation. Covers aspects of ethics, law, business, and marketing, and develops students use and integration of structural-based and energy-based body systems. Includes Swedish massage, structural-based massage, Myofascial release, trigger point therapy, traditional Chinese medicine, acupuncture, shiatsu, reflexology, and other advanced techniques. (90-0).

**MTP 290-299 Special Projects in Massage Therapy**

## MUSIC COURSES

**MUS 100 Elements of Music** **3 Sem Hrs**  
Rudiments of music, including notation, clefs, keys, syllables, and rhythm. Elementary conducting technique. Planned to meet the basic musical needs of prospective elementary teachers. Also is a basic course in beginning theory for anyone interested in music. Recommended to be taken concurrently with MUS 131. (45-0)

**MUS 111 Music Appreciation I** **3 Sem Hrs**  
Provides fundamentals of listening to and understanding of instrumental music (concerto, small ensemble). Presents basic principles for discussion as they relate to a variety of examples from classical, folk, and pop styles. (45-0)

**MUS 112 Music Appreciation II** **3 Sem Hrs**  
Prerequisite: MUS 111 or Permission of instructor. Continued study of instrumental music (concerto small ensemble). Promotes an understanding of and for vocal forms (Opera, art, song, large choral work, i.e., oratorios, masses). (45-0)

**MUS 118 Jazz History: Origins to the Present** **3 Sem Hrs**  
Assists students in developing an interest in and respect for Jazz as an original American art form. Traces Jazz history from its theoretical origins to the present. Focuses on the evolutionary development of the music and the artists who brought about Jazz. (45-0)

**MUS 131 Piano I** **2 Sem Hrs**  
Beginning class instruction leading to the ability to play melodies and accompanying chord patterns and rhythms. (15-15)



**MUS 132 Piano II** 2 Sem Hrs  
Prerequisite: MUS 131 or Permission of the instructor. Continuation of Piano I. (15-15)

**MUS 135 Fundamentals of Guitar** 2 Sem Hrs  
Introduces basic written music notation, simple chords, strumming patterns, and right hand fingerstyle patterns. Performs a variety of traditional and popular songs. Enriches music skills for students and teachers. (30-0)

**MUS 136 Popular Guitar Styles** 2 Sem Hrs  
Prerequisite: MUS 135 or permission of instructor. Student must provide own instrument. Utilizes rock, jazz, blues, and other songs to teach popular guitar styles. Uses tablature and chord charts extensively. Teaches scales and chords according to the needs of each style covered. Improvises over simple progressions in each of the above styles. (30-0)

**MUS 137 Classical Guitar** 2 Sem Hrs  
Prerequisite: MUS 135 or permission of instructor. Nylon-string classical guitars are recommended. Introduces techniques and repertoire of the classical guitar and students will perform a variety of simple repertoire pieces from different historical style periods. Emphasizes solo and ensemble playing. Teaches rest stroke, free stroke, arpeggio technique, proper posture and positioning, reading music in 2 parts, and basic expressive interpretation. (30-0)

**MUS 138 Music Voice Class** 2 Sem Hrs  
Studies breathing, resonance, diction and interpretation of various styles of vocal music. (30-0)

**ALL APPLIED MUSIC COURSES.** Prerequisite: Permission of music department. Private instruction/lessons provided and a minimum number of hours of weekly practice is required. A jury examination will be held at the end of each semester.

MUS 171	Applied Music Piano Minor-Freshman	1 Sem Hr
MUS 172	Applied Music Piano Minor-Freshman	1 Sem Hr
MUS 271	Applied Music Piano Minor-Sophomore	1 Sem Hr
MUS 272	Applied Music Piano Minor-Sophomore	1 Sem Hr
MUS 173	Applied Music Instrumental Minor-Freshman	1 Sem Hr
MUS 174	Applied Music Instrumental Minor-Freshman	1 Sem Hr
MUS 273	Applied Music Instrumental Minor-Sophomore	1 Sem Hr
MUS 274	Applied Music Instrumental Minor-Sophomore	1 Sem Hr
MUS 175	Applied Music Voice Minor-Freshman	1 Sem Hr
MUS 176	Applied Music Voice Minor-Freshman	1 Sem Hr
MUS 275	Applied Music Voice Minor-Sophomore	1 Sem Hr
MUS 276	Applied Music Voice Minor-Sophomore	1 Sem Hr
MUS 181	Applied Music Piano Major-Freshman	2 Sem Hr
MUS 182	Applied Music Piano Major-Freshman	2 Sem Hr
MUS 281	Applied Music Piano Major-Sophomore	2 Sem Hr
MUS 282	Applied Music Piano Major-Sophomore	2 Sem Hr
MUS 183	Applied Music Instrumental Major-Freshman	2 Sem Hr
MUS 184	Applied Music Instrumental Major-Freshman	2 Sem Hr
MUS 283	Applied Music Instrumental Major-Sophomore	2 Sem Hr
MUS 284	Applied Music Instrumental Major-Sophomore	2 Sem Hr
MUS 185	Applied Music Voice Major-Freshman	2 Sem Hr
MUS 186	Applied Music Voice Major-Freshman	2 Sem Hr
MUS 285	Applied Music Voice Major-Sophomore	2 Sem Hr
MUS 286	Applied Music Voice Major-Sophomore	2 Sem Hr

**MUS 290-299 Special Project in Music**

**NT 161 Transition - Basic Principles of Adult Care** 2 Sem Hrs  
Prerequisite: LPN or Paramedic Licensure, 1 year full time equivalent work experience and validation for Transition program. Utilizes nursing process as the framework for learning basic nursing concepts. Solidifies knowledge related to aseptic technique, nutritional requirements, medication administration, fluid and electrolyte regulation and acid-base balance. Credit may be earned in NUR 161 or NT 161 but not both. (30-0)

**NT 162 Role and Function of the RN** 2 Sem Hrs  
Prerequisite: LPN or Paramedic Licensure, 1 year full time equivalent work experience and validation for program. Discusses the role and function of the registered nurse, including history of nursing, nursing theorists and social policy. Emphasizes communication, ethical and legal implications for nursing, education preparation for various nursing roles, image of nursing, political action, theories and models of practice, teaching/learning principles, concepts of ethnic and cultural diversity. Credit may be earned in NUR 162 or NT 162 but not both. (30-0)

**NT 163 Advanced Principles of Adult Care for the LPN/Licensed Paramedic** 6 Sem Hrs  
Prerequisite: NT 161 and NT 162 with a minimum grade of "C" (2.0). Applies nursing process to the care of the adult patient. Studies health care problems related to sensory and motor function, gas exchanges, transportation of substances to and from the cells, alterations in endocrine, musculoskeletal, immunologic, gastrointestinal, renal, and neuro function and requires clinical application of concepts in an acute care setting. Credit may be earned in NUR 163 or NT 163 but not both. (45-135)

**NT 215 Transition-Maternity Nursing** 3 Sem Hrs  
Prerequisite: NT 163 with a grade of "C" or better. Presents nursing care of the childbearing family. Focuses on distinguishing normal from abnormal conditions and interventions to promote a safe, satisfying experience. Provides clinical opportunities to employ the nursing process in selected health care settings. Credit may be earned only NT 215, NUR 105, NUR 115, or NUR 164. (20-75)

**NT 216 Transition-Pediatric Nursing** 3 Sem Hrs  
Prerequisite: NT 163 with grade of "C" (2.0). Presents nursing care of the child and family experiencing illness/hospitalization. Emphasizes principles of growth and development, and bio-psycho-social needs of clients from infancy through adolescence. Provides clinical opportunities to employ the nursing process in a variety of health care settings to best meet the learning needs of the transition student. Credit may be earned only in NT 216, NUR 106, NUR 116, or NUR 164. (20-75)

**NT 219 Transition-Mental Health Nursing** 3 Sem Hrs  
Prerequisite: NT 163 with grade of "C" (2.0). Provides opportunities, in selected health care/mental health agencies, to apply pertinent theory and nursing intervention skills to care for clients and families experiencing emotional distress. Credit may be earned only in NT 219, NUR 209, or NUR 119. (20-75)

**NT 290-299 Special Projects in Nursing Transition**

## NURSING COURSES

**NOTE:** The following courses are subject to the Nursing Progression and Retention Policies.

**NUR 100A Introduction to Nursing Careers** 1 Sem Hr  
Provides strategies and skills to enhance success within Delta's nursing program. Emphasizes critical thinking, time management, and learning styles. Includes overview of nursing's past and present, and challenges for the future. Credit may be earned in NUR 100 or NUR 100A, but not both. (15-0)

## NURSING TRANSITION COURSES

**NT 160 Transitional Skills and Concepts** 1 Sem Hr  
Prerequisite: Completion of NT 161 and NT 162 with a "C" grade or better. Focuses on basic nursing skills/procedures and related communication. Includes opportunities to practice specific nursing procedures in a simulated and clinical laboratory setting. Requires demonstration of skill competencies and documentation for successful course completion. (6-27)



**NUR 101A Nursing Fundamentals****5 Sem Hrs**

Prerequisite: Current validation for RN program. Introduces the role of professional nursing practice based upon principles of the biological and social sciences. Identifies legal and ethical aspects of nursing practice. Emphasizes specific concepts and nursing process as the framework for nursing diagnosis and practice skills. Includes opportunities to practice specified nursing clinical skills and/or procedures in a simulated laboratory setting. (53-75)

**NUR 101B Care of the Elderly Adult****4 Sem Hrs**

Prerequisite: NUR 101A. Introduces concepts of gerontological nursing. Emphasizes the application of nursing process and nursing diagnoses in the clinical laboratory setting. Provides opportunities to practice basic clinical nursing skills and techniques in the care of older adults in a variety of environments and health care settings. (37-93)

**NUR 115 Maternity Nursing****3 Sem Hrs**

Prerequisite: NUR 101B with minimum grade of "C" (2.0). Concurrent enrollment in NUR 116 and NUR 119. Presents nursing care of the child bearing family. Focus on distinguishing normal from abnormal conditions and interventions to promote a safe, satisfying childbirth experience. Provides clinical opportunities to employ the nursing process in selected health care settings. (25-65)

**NUR 116 Pediatric Nursing****3 Sem Hrs**

Prerequisite: NUR 101B with minimum grade of "C" (2.0). Concurrent enrollment in NUR 115 and NUR 119. Presents nursing care of the child and family experiencing illness/hospitalization. Emphasis on principles of growth and development, and bio-psycho-social needs of clients from infancy through adolescence. Provides clinical opportunities to employ the nursing process in selected health care settings. (25-65)

**NUR 119 Mental Health Nursing****3 Sem Hrs**

Prerequisite: NUR 101B with minimum grade of "C" (2.0). Concurrent enrollment in NUR 115 and NUR 116. Provides opportunities, in selected health care/mental health agencies, to apply pertinent theory and nursing intervention skills to care for clients and families experiencing emotional distress. (25-65)

**NUR 125 Strategy For Success****2 Sem Hrs**

Prerequisite: Current validation for RN nursing program. Identifies potential barriers to success in nursing programs. Provides strategies and skills to enhance success. Emphasizes critical thinking, problem-solving, conceptual thinking, and study skills related to reading, writing and test taking. Includes time management, stress reduction, learning styles, communication skills and building self-esteem techniques. (30-0)

**NUR 240 Basic Nursing Care of the Adult Client****9 Sem Hrs**

Prerequisite: NUR 115, 116, 119 with minimum grade of "C" (2.0). Emphasizes critical thinking in basic to complex nursing care of the adult client. Applies Orem's Self-Care theory and basic management concepts for young to aged medical/surgical clients. Includes nursing care of clients with commonly occurring health care problems related to: sensory and motor function; gas exchange and transportation of substances to and from cells; alterations in endocrine, musculoskeletal, immune, genitourinary, gastrointestinal and gynecological systems. (60 -225)

**NUR 250 Nursing Care and Management Throughout the Health Continuum****9 Sem Hrs**

Prerequisite: NUR 240 or NT 215, NT 216, and NT 219 with minimum grade of "C" (2.0). Emphasizes concepts, principles, and skills expected for entry level nursing practice, in regards to the three NLN/ADN roles: Provider of Care, Manager of Care, and Member within the Discipline of Nursing. Provides opportunities to enhance nursing practice skills related to these roles with care of clients in the acute care setting. Focuses on managing a group of clients having acute cardiovascular, respiratory, and renal dysfunctions; and studies care of clients facing crisis with cancer, trauma, hemodynamic changes, shock and multi-system failure. Incorporates Orem's self-care theory and critical thinking for complex decision making. (45-270)

**NUR 290-299 Special Projects in Nursing****OFFICE ADMINISTRATION AND TECHNOLOGY COURSES****OAT 105 Time Management****1 Sem Hr**

Explores the principles of effective time and life management. Develops skills in time management using a traditional paper planner as well as an electronic calendar. Credit may be earned in OSE 105 or OAT 105 but not in both. (15-0)

**OAT 116 Introduction to the Medical Office****2 Sem Hrs**

Prerequisite: MTH 092 or MTH 102 or appropriate assessment score. Introduces the pegboard system including day sheets, patient ledgers and receipts; emphasizes the accurate recording of charges, payments and adjustments. Also introduces basic accounting procedures including journalizing, posting, banking, payroll, and preparation of the income statement and balance sheet. Credit may be earned in OSE 116 or OAT 116 but not in both. (30-0)

**OAT 150 Business English****3 Sem Hrs**

Prerequisite: ENG 108 or appropriate reading assessment score of 71 or higher on COMPASS OR 38 and higher on ASSET. Emphasizes the development of sound English usage skills. Emphasizes language skills that will enable you to perform effectively and efficiently in an information-based work environment. Credit may be earned in OSE 150 or OAT 150 but not in both. (45-0)

**OAT 151 Business Communication I****3 Sem Hrs**

Prerequisite: OAT 150 or OSE 150 with a "C" (2.0) grade minimum or satisfactory assessment testing score. (40 or higher on ASSET; 65 or higher on COMPASS) Includes principles and composition of effective basic business letters and memos as well as accuracy in grammar, spelling, punctuation, sentence structure, and format. Keyboarded assignments are required. Credit may be earned in OAT 151 or OSE 151 but not in both. (45-0)

**OAT 152 Business Communication II****3 Sem Hrs**

Prerequisite: Business Communication I (OAT 151 or OSE 151) with a "C" (2.0) grade minimum. Studies effective verbal and nonverbal communication in business. Emphasizes audience reaction, logical organization, tone, clarity, and accuracy. Involves career information, the research process, and reporting. Credit may be earned in OSE 152 or OAT 152 but not in both. (45-0)

**OAT 153 Police Report Writing****1 Sem Hr**

Concurrent enrollment in CJ 101, LWT 175, and LW 280. Requires a grade of "C" (2.0) or better to complete the Basic Police Training Academy. Develops and enhances writing skills necessary to law enforcement including preparation of police reports, incident reports, summaries of witness and complaint interviews, and criminal case summaries. Credit may be earned in OSE 153 or OAT 153 but not in both. (15-0)

**OAT 155 Editing****2 Sem Hrs**

Prerequisite: OAT 151 or OSE 151 and OAT 171 or OSE 171 or demonstrated keyboarding skills. Develops proofreading and editing skills. Reviews business writing principles and the use of revision symbols. Emphasizes revising both format and content of business documents. Credit may be earned in OSE 155 or OAT 155 but not in both. (30-0)

**OAT 157 File Management****2 Sem Hrs**

Prerequisite: OAT 170 or OSE 170 or equivalent. Covers principles and practices of effective records management for manual and automated records systems using alphabetic, numeric, chronologic, and subject methods. Introduces database concepts needed for understanding automated records storage and retrieval methods including adding, modifying, sorting, designing, searching and printing. Credit may be earned in OSE 157 or OAT 157 but not in both. (30-0)

**OAT 166 Office Externship****3 Sem Hrs**

Prerequisite: Minimum 25 credits completed in Administrative Assistant program. Student must apply for placement in OAT 166 in semester previous to anticipated placement. Integrates and reinforces the student's academic studies with related work of at least 180 hours at a designated work site. Seminars will be held on campus as a forum of discussion for career enhancement. Credit may be earned in OSE 166 or OAT 166 but not in both. (15-180)



## 2 Sem Hrs

OAT 171 Document Processing: Beginning 3 Sem Hrs

**OAT 172 Document Processing: Intermediate 3 Sem Hrs**

<b>OAT 175</b>	<b>Electronic Calculation</b>	<b>2 Sem Hrs</b>
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<b>OAT 178</b>	<b>Keyboard Skillbuilding I</b>	<b>2 Sem Hrs</b>
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<b>OAT 179</b>	<b>Keyboard Skillbuilding II</b>	<b>2 Sem Hrs</b>
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<b>OAT 250</b>	<b>Diagnostic and Procedure Coding</b>	<b>3 Sem Hrs</b>
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OAT 254	Medical Insurance I	3 Sem Hrs
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OAT 255	Medical Insurance II	3 Sem Hrs
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OAT 260	Medical Transcription: Beginning	3 Sem Hrs
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**OAT 262      Medical Transcription: Intermediate      3 Sem Hrs**

OAT 266 Medical Office Practice 4 Sem Hrs

<b>OAT 268</b>	<b>Professional Office Procedures</b>	<b>3 Sem Hrs</b>
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**OAT 273 Document Processing: Advanced 3 Sem Hrs**

<b>OAT 285</b>	<b>Office Technology</b>	<b>3 Sem Hrs</b>
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## PHILOSOPHY COURSES

<b>PHL 203</b>	<b>Business Ethics</b>	<b>3 Sem Hrs</b>
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**PHL 205**     **Media Ethics & Law**     **3 Sem Hrs**

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**PHL 207 Engineering Ethics** 1 Sem Hr  
Provides a foundation for the study and analysis of various ethical issues and dilemmas within the engineering profession. Develops analytical decision-making skills for resolving ethical conflicts. Studies topics such as ethical standards versus legal standards, safety hazards, whistle blowing, disclosure of information, professionalism, enhancement of human welfare through engineering competence and individual ethics versus job security. (15-0)

**PHL 211 Introduction to Philosophy** 3 Sem Hrs  
Designed to acquaint the student with some of the fundamental philosophical questions that have confronted mankind and evaluate various ways of answering these questions. (45-0)

**PHL 213 Introduction to Ethics** 3 Sem Hrs  
Investigates the age-old questions of what's right, what's wrong, and how to know the difference. Through conversation, reading and writing, students explore practical issues such as, abortion, mercy killing, suicide, sex, animal rights, and social inequality. This course is designed to improve students' decision making, thinking, writing, reading and speaking skills and to increase their knowledge and understanding of conflicting values. (45-0)

**PHL 214 Philosophy of Religion** 3 Sem Hrs  
Investigates the rationality of religious beliefs, and the meaning of religious practices, religious language and questions of evidence. Focuses on questions concerning proof of the existence of a deity, the problem of evil, the interpretation of mystical experience, the nature of religious faith and more. (45-0)

**PHL 215 Health Care Ethics** 3 Sem Hrs  
An introduction to moral problems encountered within the health care environment. Includes the identification of ethical issues, the learning of various ethical principles, and the analysis of ethical conflicts. Topics such as euthanasia, experimentation, the right to provide or deny health care, definitions of death, informed consent, allocation of medical resources, and humanizing the health care environment. (45-0)

**PHL 221 Critical Thinking and Logic** 4 Sem Hrs  
Development of critical thinking skills through the study of formal and informal logic. Analysis of fallacies, methods of clear argumentation, syllogisms, inductive logic, scientific method and rational decision-making. (60-0)

**PHL 230 Bioethics** 2 Sem Hrs  
Addresses basic ethical concepts such as rights and duties, intrinsic and instrumental values, autonomy and the principle of utility. Includes confidentiality, veracity, paternalism, informed consent, abortion, and euthanasia. Uses case studies to develop decision-making abilities. (30-0)

**PHL 240/240H Social and Political Theory** 3 Sem Hrs  
Examines past and present political and social systems from theoretical perspective. Entails comparison and evaluation of major ideologies and philosophies of the relationship of individuals to political and social institutions. Political systems such as socialism, communism, fascism, anarchism and liberalism explored. Credit may be earned in PHL 240 or POL 240 but not in both. (45-0)

**PHL 250 Philosophy of Science and Technology** 3 Sem Hrs  
Investigates the nature of science as social process and as product; the nature and role of creativity in scientific and technological research; the influence of society and politics on technology and scientific thinking and research; the uses of technology; myths about science and technology; the role of inductive and deductive logic in the scientific process; the nature and conditions of a good test of an hypothesis and theory; the nature of scientific evidence; science as debate in process and as established knowledge. (45-0)

**PHL 255 Philosophy of Art** 3 Sem Hrs  
Prerequisite: At least one previous Art or Philosophy course. Deals with the nature of and definition of art, artistic creativity, art criticism, and the role of philosophy for the artist and audience. (45-0)

**PHL 260/260H Philosophy Seminar** 3 Sem Hrs  
Prerequisite: Students must have completed one philosophy course. Intensive examination and critical analysis of a specific philosopher's works or a specific philosophical issue within any branch of philosophy, e.g., ethics, metaphysics, epistemology, social or political philosophy. Designed as a seminar for the advanced student. (45-0)

**PHL 290-299 Special Projects in Philosophy**

## PHARMACOLOGY COURSES

**PHM 285 Pharmacology for Health Care Professionals** 3 Sem Hrs  
Prerequisite: Completion of BIO 152 and MTH 117 with a minimum grade of "C" (or equivalent skills). Presents the basic foundation of pharmacology. Offers drug information in group classification format and includes drug indications, action, contraindications, side effects, implications for administration, and related client/family teaching, integrates anatomy and pathophysiology, microbiology and drug administration concepts. Credit may be earned in NUR 285 or PHM 285, but not both. (45-0)

**PHM 290-299 Special Projects in Pharmacology**

## PHOTOGRAPHY COURSES

**PHO 100 Elements of Color Photography** 3 Sem Hrs  
Introduces technical operations of 35-mm cameras in the color medium. Improves quality and design of photographs and develops aesthetic awareness and visual literacy. Credit may be earned in ART 100, ART 100a, PHO 100 or PHO 100A but not in more than one. (45-0)

**PHO 101 Photography I** 3 Sem Hrs  
Applies basic aesthetic problems of photography including: a historical and critical context for looking at and making photographs; concurrent darkroom practice which includes black and white film; print development and camera operations. Additional lab hours to be arranged. (0-90)

**PHO 102 Photography II** 3 Sem Hrs  
Prerequisite: PHO 100 or 101 or permission of instructor. Provides additional foundations of black and white photography, directed to improve skills. Introduces specialty films and techniques. Experiments include infrared and Kodalith films, solarization, reticulation, and montage problems. Additional lab hours to be arranged. (0-90)

**PHO 107 Photographic Printmaking** 3 Sem Hrs  
Exploration of a variety of image-making possibilities through the printing of objects, found pictures, photographic negatives and the photographic collage. Intent is to combine a mixture of contemporary materials and antique processes. Printing methods cover: Cyanotype, Van Dyke Brown, Kwik Print, liquid silver emulsion, and photographic silkscreen. (45-30)

**PHO 119 Photographic Vision** 3 Sem Hrs  
Operate a 35mm camera effectively through a series of photographic projects designed to increase knowledge of the techniques and aesthetic considerations of making images as well as gain a greater understanding and appreciation of the creative process. (45-0)

**PHO 202 Color Photography I** 3 Sem Hrs  
Prerequisite: PHO 100 or PHO 101 or equivalent. Fundamental techniques of color negative films and printing materials, with a study of the history and aesthetic concerns of the media. Projects will focus on a variety of visual approaches. The documentary style, photo illustration, the commercial assignment and the artistic viewpoint. Additional laboratory time to be arranged beyond the scheduled lecture/laboratory. Formerly PHO 105 Color Photography. (45-30)

**PHO 206 Digital Photography** 3 Sem Hrs  
Prerequisite: PHO 100 or PHO 101. Introduces basic techniques of digital photography, with emphasis on the creative use of media in fine and applied art. Utilizes slide presentations, videos, CD Roms, and the internet as resources. (0-90)

**PHO 290-299 Special Projects in Photography**



## PHYSICS COURSES

**PHY 101 Applied Physics 4 Sem Hrs**  
Prerequisite: Successful completion (minimum grade of "C" (2.0) of MTH 107 or equivalent. Introduces the basic physical principles involving mechanics, fluids, heat, conservation of energy, and electricity. (60-30)

**PHY 111 General Physics I 4 Sem Hrs**  
Prerequisites: Trigonometry or high school physics and MTH 119 or equivalent. Designed to familiarize the student with basic physical principles involving mechanics, heat, and sound. (60-45)

**PHY 112 General Physics II 4 Sem Hrs**  
Prerequisite: PHY 111. Designed to familiarize the student with basic physical principles involving electricity, magnetism, light, and modern physics. (60-45)

**PHY 211 Physics I 5 Sem Hrs**  
Prerequisites: MTH 161. High school physics recommended. Designed to familiarize science and engineering majors with basic physical principles involving mechanics, heat, and sound. (75-45)

**PHY 212 Physics II 5 Sem Hrs**  
Prerequisites: PHY 211 and MTH 162. Designed to familiarize science and engineering majors with basic physical principles involving electricity, magnetism, light, and modern physics. (75-45)

**PHY 290-299 Special Projects in Physics**

## PRACTICAL NURSING EDUCATION COURSES

**PNE 121 Fundamentals of Nursing 9 Sem Hrs**  
Prerequisite: Validation for PN Program course work. Focuses on the Nursing Process as applied to basic human needs, introduces concepts and theories related to holistic patient care and health education. Includes nutrition, cultural, psychosocial, basic mental health concepts and legal aspects pertaining to practical nursing. Includes opportunities to practice basic clinical nursing skills and techniques in the care of adults in selected clinical facilities. Credit can be earned in PNE 101 or PNE 121 but not both. (90-135)

**PNE 122 Care of Adult I 9 Sem Hrs**  
Prerequisite: PNE 121 or PNE 101 with minimum grade of "C" (2.0). Emphasizes application of the nursing process in the care of the adult medical-surgical patient. Includes the study of altered systems: respiratory, endocrine, cardiac, neuro, hematology, immune, gastrointestinal, and renal. Study of concepts related to oncology, team dynamics, fluid and electrolyte balance, communication, teaching learning, nutrition, and pre- and post-operative care. Credit may be earned in PNE 102 or PNE 122 but not in both. (90-135)

**PNE 123 Care of Adult II 6 Sem Hrs**  
Prerequisite: PNE 122 or PNE 102 with minimum grade of "C" (2.0). Focuses on care of the adult patients experiencing healing alterations related to the following systems: musculoskeletal, eye-ear, skin and reproductive. Credit may be earned in PNE 104 or PNE 123 but not in both. (30-180)

**PNE 124 Maternal Child Care Nursing 5 Sem Hrs**  
Prerequisite: PNE 123 or PNE 104 with minimum grade of "C" (2.0). Introduces nursing care of the family during child-bearing and child-rearing. Focuses on basic family-centered maternity care, growth and development, and care of pediatric patients and their families with common well-defined problems. Includes observation and selected hands-on experiences in clinical facilities. Credit may be earned in PNE 103 or PNE 124 but not in both. (60-45)

**PNE 290-299 Special Projects in Practical Nursing**

## POLITICAL SCIENCE COURSES

**POL 103, 111, 212, and 221 satisfy the government graduation requirement.**

**POL 103/103H Introduction to American Government 3 Sem Hrs**  
Organizations and functions of the political, electoral, legislative, administrative, and judicial processes of federal, state, and local governments. Credit may be earned in POL 103 or POL 111 but not in both. (45-0)

**POL 111/111H American Government and Politics 4 Sem Hrs**  
A study of the American political system utilizing the techniques of political science. Particular emphasis is placed on the organization and functioning of the electoral, legislative, administrative, and judicial process of the national government. Comparisons are made between federal, state, and local governments. Recommended for pre-law or social science majors or minors. Credit may be earned in POL 111 or POL 103 but not in both.

**POL 212 State and Local Governments 3 Sem Hrs**  
Examines the development, structure, organization and problems of the state and local units of government, along with their relation to the federal government. (45-0)

**POL 220 Minority Group Politics 3 Sem Hrs**  
Examines the dynamics of minority group politics in the American political system. Analyzes the nature, role, techniques, and objectives of ethnic groups in the United States with special emphasis on African-Americans and Hispanics. (45-0)

**POL 221 Comparative Government 3 Sem Hrs**  
Studies major European and selected non-western political systems. Emphasizes the techniques of comparative analysis and concepts of modernization, political development, and political culture. (45-0)

**POL 225 International Relations 3 Sem Hrs**  
Analyzes continuity and change in the international system. Emphasizes the development of the nation-state system, cold war politics, colonialism, problems of political stability, and the role of regional and international organizations. (45-0)

**POL 228 Constitutional Issues 3 Sem Hrs**  
A study of contemporary constitutional controversies set against their historical background. Typical issues discussed include: death penalty; abortion; euthanasia; freedom of the press vs. national security; presidential and congressional control of foreign policy; the insanity plea; and affirmative action. (45-0)

**POL 229 Political Terrorism 3 Sem Hrs**  
A study of state- and non-state sponsored terrorism: definition, origins, purposes, and nature of terrorism; tactics and weapons; objects and audiences; responses of objects and audiences: theory and case studies. (45-0)

**POL 241 Contemporary Feminist Thought 3 Sem Hrs**  
Provides a theoretical introduction to feminist thought and relates feminist thought to American political thought and American society. (45-0)

**POL 268 International Studies in Political Science 1-4 Sem Hrs**  
The student will elect to do either a survey study of the overall political system of a country other than the United States or an in-depth study of one or more aspects of that political system. Overseas study is an integral part of the course. Expenses for travel and overseas study must be borne by the student. (60-0)

**POL 275 The Vietnam War 3 Sem Hrs**  
An interdisciplinary examination of the Vietnam War from its earliest beginnings as a colonial conflict to the withdrawal of American forces in 1975. The course seeks to integrate military, diplomatic and political factors in order to understand America's involvement. It also is an attempt to consider American decision-making in the broad context of the nation's global outlook and policies. Credit may be earned in POL 275 or HIS 275 but not in both. (45-0)

**POL 290-299 Special Projects in Political Science**

## PHYSICAL SCIENCE COURSES

**PSC 101 Physical Science I** **4 Sem Hrs**  
Investigates fundamental concepts of physics, astronomy and geology through hands-on, applications based approach. Includes such topics as thermodynamics, electricity, magnetism, waves, both light and sound, our solar system, and stellar evolution. Complements Physical Science II, PSC 102. Recommended for non-science majors, including education majors. (45-30)

**PSC 102 Physical Science II** **4 Sem Hrs**  
Prerequisite: PSC 101. Investigates fundamental concepts of chemistry and mechanics through a hands-on, applications based approach. Includes such topics as atomic structure, periodic table, bonding, chemical reactions, intermolecular forces, organic chemistry, motion of objects, forces and how they relate to simple machines, mechanical energy, and fluid mechanics. Complements Physical Science I, PSC 101. Recommended for non-science majors, including education majors. (45-30)

**PSC 290-299 Special Projects in Physical Science**

## PSYCHOLOGY COURSES

**PSY 101 Applied Psychology** **3 Sem Hrs**  
An introductory course in basic principles of human relations that may be used in business and industry. Emphasis on understanding motivation and behavior in practical situations; help in developing an appreciation of our own behavior so that students may work more successfully with supervisors and with peers. (45-0)

**PSY 211/211H General Psychology** **4 Sem Hrs**  
A study of the scientific principles underlying experience and behavior. Designed to give an understanding of human behavior in terms of the intrapsychic, behavioral, physiological, and environmental viewpoints. The course will cover basic research methods, learning, social factors, developmental changes, physiology, sensation, perception, motivation, intelligence, and personality. (60-0)

**PSY 223 Child Psychology** **3 Sem Hrs**  
Prerequisite: PSY 211 or CD 114. Provides an in-depth understanding of the emotional, intellectual, social, and physical development in children from conception through adolescence. Considers the effect of heredity, environment, culture, and values on children's behavior, as well as, the effect children have on adults' behavior. A student must earn a grade of "C" (2.0) or better in this course to obtain a certificate or an Associate Degree of Applied Science in Child Development. Credit may be earned in PSY 223 or CD 115 but not in both. (45-0)

**PSY 230 Psychology of Substance Abuse** **3 Sem Hrs**  
Prerequisite: PSY 211. Studies the predominant theories developed to explain the origins and the prevalence of substance abuse. Examines social deprivation, additive personality, X-factor, need state, ignorance, peer pressure, personality defects and socialization theories. Credit may be earned in PSY 130 or PSY 230, but not in both. (45-0)

**PSY 231 Theories of Personality** **3 Sem Hrs**  
Prerequisite: PSY 211. An examination of theories of personality development from a psychodynamic, social learning and humanistic perspective. Individual theories are critiqued regarding personality development, abnormality, psychotherapy, research, and the concept of humanity. (45-0)

**PSY 235 Adult Development** **3 Sem Hrs**  
Prerequisite: PSY 211. Examines human behavior and adaptation in the adult years. Topics will include: Theories of adult development, psychological aspects of normal adulthood, and behavioral disorders due to aging. Emphasis will be placed on application of theoretical concepts and research findings. (45-0)

**PSY 241 Abnormal Psychology** **3 Sem Hrs**  
Prerequisite: PSY 211. An examination of symptoms, and treatment of psychological disorders, including the psychodynamic, behavioral, humanistic, and neuroscience views of abnormal behavior. (45-0)

**PSY 255 Psychology of Depression** **2 Sem Hrs**  
Prerequisite: PSY 211. Defines depression with emphasis on biological aspects, cognitive and life stress approaches. Emphasizes social aspects of depression. Discusses biological and psychological treatment of depression. (30-0)

**PSY 290-299 Special Projects in Psychology**

## PHYSICAL THERAPIST ASSISTANT COURSES

**PTA 101 Clinical Anatomy** **2 Sem Hrs**  
Prerequisite: Admission to the Physical Therapist Assistant Program. Provides the gross anatomy concepts necessary to implement procedures utilized in physical therapy practice. (30-15)

**PTA 102 Clinical Neuroanatomy** **2 Sem Hrs**  
Prerequisite: PTA 101, 105 and 110 each with a "C" (2.0) minimum grade. Provides the neuroanatomy concepts necessary to implement procedures utilized in physical therapy practice. (30-0)

**PTA 105 Modalities I** **5 Sem Hrs**  
Prerequisite: Admission to the Physical Therapist Assistant program. Provides the theory, principles, and technical skills for modalities including, but not limited to, hydrotherapy, massage, ultrasound, diathermy, traction, Jobst, paraffin, cryotherapy, myofascial release. (30-75)

**PTA 110 Therapeutic Exercise I** **3 Sem Hrs**  
Prerequisite: Admission to the PTA program. Introduces basic therapeutic exercise and activities of daily living (A.D.L.) (30-45)

**PTA 120 Therapeutic Exercise 2** **2 Sem Hrs**  
Prerequisites: PTA 101, 105, and 110 each with a "C" (2.0) minimum grade. Introduces the general principles, rationale, and technical skills related to rehabilitation techniques for orthopedic, neurological, medical, pediatric, and respiratory disabilities. (15-45) WD

**PTA 121 Human Growth and Development** **3 Sem Hrs**  
Prerequisite: PTA 101, 105, and 110 each with a "C" (2.0) minimum grade. Provides theory in and observation of normal and abnormal physical development from birth through aging. (45-0)

**PTA 123 Clinical Medicine 1** **3 Sem Hrs**  
Prerequisite: PTA 101, 105, and 110 each with a "C" (2.0) minimum grade. Introduces acute and chronic pathological conditions resulting from disease or injury that are commonly treated in physical therapy. (30-30)

**PTA 124 PTA Clinic I** **2 Sem Hrs**  
Prerequisite: PTA 101; 105 and 110 each with a "C" (2.0) minimum grade. Structures clinical experience to provide the opportunity to observe and assist with physical therapy procedures. (0-192) WD

**PTA 125 Measurements Techniques** **3 Sem Hrs**  
Prerequisite: PTA 101, 105, and 110 each with a "C" (2.0) minimum grade. Provides the technical skills and knowledge necessary to assist a physical therapist with goniometry, muscle testing gait/posture evaluations, and sensory/coordination assessment. (15-45) WD

**PTA 205 Modalities II** **2 Sem Hrs**  
Prerequisite: PTA 102, 120, 121, 123, 124, 125 each with a "C" (2.0) minimum grade. Provides the theory, principles, and technical skills necessary to perform electrotherapy and other advanced modalities. (12-24)

**PTA 210 Therapeutic Exercise 3** **4 Sem Hrs**  
Prerequisite: PTA 102, 120, 121, 123, 124, 125. Studies the advanced theory and treatment of patients with diagnosis of stroke, spinal cord injury, traumatic brain injury, as well as the treatment of sensor motor facilitation and inhibition techniques (30-60)

**PTA 213 Clinical Medicine 2** **1 Sem Hr**  
Prerequisites: PTA 102, 120, 121, 123, 124, and 125. Studies and utilizes orthotics and prosthetics, as well as preparing patients to use this equipment. (12-15)



**PTA 214 PTA Clinic 2 3 Sem Hrs**  
Prerequisite: PTA 102, 120, 121, 123, 124 and 125 each with a "C" (2.0) minimum grade. Structured clinical experience designed to provide the opportunity to observe and assist physical therapy procedures. (0-160)

**PTA 215 Rehabilitation Programs 2 Sem Hrs**  
Prerequisite: PTA 102, PTA 120, PTA 121, PTA 123, PTA 124 and PTA 125. Introduces and studies rehabilitation team members, and needed collaboration with PTA profession for effective patient treatment. (30-0)

**PTA 221 Clinical Seminar 2 Sem Hrs**  
Prerequisite: PTA 220 with a "C" (2.0) minimum grade. Studies the professional, ethical, and legal issues related to clinical practice. Analyzes continuity and change in the health care system. (30-0)

**PTA 224 PTA Clinic 3 9 Sem Hrs**  
Prerequisite: PTA 205, 210, 213, 214 and 215 with a "C" (2.0) minimum grade. Structured clinical experience designed to provide opportunity for integration and refinement of the knowledge and skills necessary for entry level employment. (0-480) WD

**PTA 290-299 Special Projects in Physical Therapy Assisting**

## QUALITY ASSURANCE COURSES

**QA 110 Quality Problem Solving Tools 1 Sem Hr**  
Develops basic skills in the use of charts and graphs as tools used in solving problems in a Quality Management organization. Demonstrates twenty-six tools such as Pareto chart, flow charts, cause/effect diagrams, control charts, etc. (15-0)

**QA 120 Quality & Productivity Management 2 Sem Hrs**  
Personnel in management and supervisory positions will demonstrate the skills and insight needed to manage effectively in a quality-conscious work environment. This is done through the study of the philosophies of Deming, Juran, Crosby, Shainin, Taguchi, and with statistical problem solving techniques. (30-0)

**QA 122 ISO 9000/QS 9000 Standards 1 Sem Hr**  
Provides overview of the International Quality System standard, ISO 9000, and the Automotive Quality System Standard based on QS 9000. Covers the history of the standards, their elements and requirements, the level of documentation needed to prove compliance and steps a company must take to implement standards with the registration process. (15-0)

**QA 124 Quality Systems I 3 Sem Hrs**  
Prerequisite: QA 120 or permission of instructor. Personnel in management and supervisory positions will demonstrate the skills to effectively plan and implement a quality system and show its relationship to other functions in an organization. This is done through the study of the Quality Function and its applications applied to service, business and industry. (45-0)

**QA 126 Quality Systems II 3 Sem Hrs**  
Prerequisite: QA 120. Demonstrates the skills to interface internal quality systems with external quality systems. Emphasizes applications for service, business and industry. (45-0)

**QA 130 Audit Preparation 1 Sem Hr**  
Prerequisite: QA 120. Explores how to prepare for non-financial audits with managers and supervisors. Focuses on audit function, understanding requirements, and the documentation to meet those requirements. Defines ISO-9000 and other assessment criteria. Explores applications for service, business and industry. (15-0)

**QA 131 Quality Auditing 2 Sem Hrs**  
Explores with managers and supervisors, the preparation for and performance of non-financial audits. Focuses on selecting audit team, planning, conducting, and summarizing the audit data and issuing a written report on the audit results. Defines auditing functions, both internal and external. Explores applications for service, business and industry. (30-0)

**QA 140 Measurement Systems 3 Sem Hrs**  
Introduces skill development in measurement analysis and measurement systems management. Emphasizes industrial measurement issues involving mechanical gauging and inspection instruments. Determines gauge and dimensional relationships along with describing the various types of industrial gauges and their usage. Explores gauge management issues and ISO 9000 requirements. (45-0)

**QA 191 Quality Teamwork 1 Sem Hr**  
Builds the student's ability to respond to the needs of groups as a team member and a team leader. Studies team structures, roles of team members, and tools used in facilitating teams that contribute to organizational quality. Provides opportunities to model effective team operations. Credit may be earned in only one of the following: QA 191, GB 191, or MGT 191. (15-0)

**QA 244 Statistical Process Control 3 Sem Hrs**  
Prerequisite: MT 110. Develops skill in the use of control charts in the manufacturing process. Selects proper control chart of the process, constructs the control chart from production data, and analyzes it for statistical stability. Includes both attribute and variable data control charts. (45-0)

**QA 246 Taguchi Techniques I 1 Sem Hr**  
Prerequisites: MTH 231 or QA 244. An overview of the Taguchi method of experimental design. Reviews the three major phases: system design; parameter design; and tolerance design; and covers the Loss Function and Signal-to-Noise Ratio. (15-0)

**QA 247 Taguchi Techniques II 3 Sem Hrs**  
Prerequisites: MTH 233 or QA 244. An in-depth study of the Taguchi technique of experimental design. Topics include: loss function; parameter design for minimum, nominal, and maximum targets; tolerance design under noise conditions. A Taguchi design of experiment project is required. (45-0)

**QA 290-299 Special Projects in Quality Assurance**

## RADIOGRAPHY COURSES

**RAD 104 Introduction to Medical Imaging 2 Sem Hrs**  
Prerequisite: Admission to the Radiography Program. Concurrent enrollment in LW 206A, RAD 105, RAD 108, RAD 110. Provides an introduction to medical imaging and its role in patient diagnosis and care. Includes the structure and operation of health care organizations and health care distribution. Emphasizes professional, legal, and ethical issues related to diagnostic imaging. (30-0)

**RAD 105 Fundamentals of Radiography 2 Sem Hrs**  
Prerequisite: Admission to Radiography Program. Concurrent enrollment in LW 206A, RAD 104, RAD 108, RAD 110. Provides the fundamental theory and skills related to the production of x-radiation. Emphasizes the basic components of radiographic equipment, the characteristics of radiation, and imaging formation. Includes methods of control of radiation and image recording systems. (24-21)

**RAD 108 Patient Care and Management 2 Sem Hrs**  
Prerequisite: Admission to Radiography Program. Concurrent enrollment in LW 206A, RAD 104, RAD 105, RAD 110. Develops knowledge and skills in basic concepts of patient care. Includes emergency care procedures, infection control, patient safety and transfers, communication, and patient education. (30-0)

**RAD 110 Principles of Radiographic Exposure 2 Sem Hrs**  
Prerequisites: Admission to Radiography Program. Concurrent enrollment in LW 206A, RAD 104, RAD 105, RAD 108. Provides the theory and skills necessary to analyze the diagnostic quality of a radiograph and effectively manipulate exposure variables to produce a diagnostic radiograph (15-22.5)

**RAD 120 Principles of Radiation Biology and Protection****2 Sem Hrs**

Prerequisite: RAD 108, 110, each with a minimum grade of "C" (2.0). Concurrent enrollment in LW 206B RAD 130, RAD 135, RAD 140. Examines biological effects of radiation on cells, organs, and systems. Emphasizes methods of practice including radiation exposure standards and radiation monitoring. (30-0)

**RAD 130 Radiographic Procedures 1****2 Sem Hrs**

Prerequisites: RAD 108, 110, each with a "C" (2.0) minimum grade. Concurrent enrollment in LW 206B, RAD 120, RAD 135, RAD 140. Introduces the basic terminology of radiographic positioning. Provides the knowledge and skill necessary to perform radiographic procedures of the chest, upper and lower limbs. Includes the study of pathology affecting the chest and limbs. (15-22.5)

**RAD 135 Clinical Education 1****6 Sem Hrs**

Prerequisites: RAD 108, and RAD110, each with a "C" (2.0) minimum grade. Concurrent enrollment in LW 206B, RAD 120, RAD 130, RAD 140. Provides structured clinical experience necessary to perform radiographic procedures of the chest, upper and lower limbs. (0-285)

**RAD 140 Clinical Seminar 1****1 Sem Hr**

Prerequisites: RAD 108, and RAD 110 each with a "C" (2.0) minimum grade. Concurrent enrollment in LW 206B, RAD 120, RAD 130, RAD 135. Provides a clinical overview of radiographic procedures of the chest, and upper and lower body limbs. Emphasizes the correlation of all aspects of a radiographic procedure. (15-0)

**RAD 150 Radiographic Procedures 2****2 Sem Hrs**

Prerequisites: RAD135 and RAD 140 each with a "C" (2.0) minimum grade. Concurrent enrollment in LW 206C, RAD 160, RAD 165. A continuation of radiographic positioning provides the knowledge and skill necessary to perform radiographic procedures of the abdomen, gastrointestinal, biliary and urinary systems. Includes the study of pathology affecting the abdomen, gastrointestinal, biliary, and urinary systems. (15-22.5)

**RAD 160 Clinical Education 2****7 Sem Hrs**

Prerequisite: RAD 135, and RAD 140 each with a "C" (2.0) minimum grade. Concurrent enrollment in LW 206C, RAD 150, RAD 165. Provides structured clinical experience necessary to perform radiographic procedures of the abdomen, biliary system, gastrointestinal system, and urinary system. Requires weekend and evening assignments. (0-395)

**RAD 165 Clinical Seminar 2****1 Sem Hr**

Prerequisites: RAD 135 and RAD 140 each with a "C" (2.0) minimum grade. Concurrent enrollment in LW 206C, RAD 150, RAD 160. Provides a clinical overview of radiographic procedures of the abdomen, gastrointestinal system, biliary system, and urinary system. Emphasizes the correlation of all aspects of a radiographic procedure. (15-0)

**RAD 205 Pharmacology in Imaging****1 Sem Hr**

Prerequisites: RAD 160 and RAD165, each with a "C" (2.0) minimum grade. Concurrent enrollment in RAD 212, RAD 215, RAD 220, RAD 225. Presents the basics principles of pharmacology imaging. Includes the basic techniques of venipuncture and the administration of diagnostic contrast agents and intravenous medications. (15-0)

**RAD 210 Pathology in Radiography****2 Sem Hrs**

Prerequisites: RAD 150, RAD 160, and RAD 165, each with a "C" (2.0) grade. Provides an overview of the pathological process that occurs as a consequence of aging, disease, heredity, or trauma including signs, symptoms, and clinical manifestations. (30-0)

**RAD 212 Advanced Imaging Equipment****1 Sem Hr**

Prerequisites: RAD 160 and RAD165, each with a "C" (2.0) minimum grade. Concurrent enrollment in RAD 205 RAD 215, RAD 220, RAD 225. Presents the basics principles of operation for specialized imaging and recording equipment. Includes tomography, image intensification, special modalities, and information systems. (15-0)

**RAD 215 Radiographic Procedures 3****2 Sem Hrs**

Prerequisites: RAD 160 and RAD165, each with a "C" (2.0) minimum grade. Concurrent enrollment in RAD 205, RAD 212, RAD 220, RAD 225. A continuation of radiographic positioning. Provides the knowledge and skill necessary to perform radiographic procedures of the shoulder girdle, bony thorax, cervical spine, thoracic spine, lumbar spine, pelvis, and hips. Includes pathologic and traumatic conditions affecting the bony thorax spine, and hips. (15-22.5)

**RAD 220 Clinical Education 3****7 Sem Hrs**

Prerequisites: RAD 160 and RAD 165 each with a "C" (2.0) minimum grade. Concurrent enrollment in RAD 205, RAD 212, RAD 215, RAD 225. Provides structured clinical experience necessary to perform radiographic procedures of the shoulder girdle, bony thorax, cervical spine, thoracic spine, lumbar spine, pelvis, and hips. May require weekend and evening assignments. (0-395)

**RAD 225 Clinical Seminar 3****1 Sem Hr**

Prerequisites: RAD 160 and RAD 165 each with a "C" (2.0) minimum grade. Concurrent enrollment in RAD 205, RAD 212, RAD 215, and RAD 220. Provides a clinical overview of radiographic procedures of the shoulder girdle, bony thorax, cervical spine, thoracic spine, lumbar spine, pelvis, and hips. Emphasizes the correlation of all aspects of a radiographic procedure. (15-0)

**RAD 230 Quality Improvement in Imaging****1 Sem Hr**

Prerequisites: RAD 220 and RAD 225 each with a "C" (2.0) minimum grade. Concurrent enrollment in RAD 232, RAD 235, RAD 245 and RAD 250. Introduces the principles of continuous quality improvement in radiology. Includes risk management, problem identification and analysis and quality assurance of the imaging systems (15-0)

**RAD 232 Radiation Physics****2 Sem Hrs**

Prerequisites: RAD 220 and RAD 225 each with a "C" (2.0) minimum grade. Concurrent enrollment in RAD 230, RAD 235, RAD 245, RAD 250. Presents the basic operation of generating equipment including electrodynamics, electromagnetism, rectification, and circuitry related to the production of s-radiation. (30-0)

**RAD 235 Radiographic Procedures 4****2 Sem Hrs**

Prerequisites: RAD 220 and RAD 225 each with a "C" (2.0) minimum grade. Concurrent enrollment in RAD 230, RAD 232, RAD 245, RAD 250. A continuation of radiographic positioning. Provides the knowledge and skill necessary to perform radiographic procedures of the skull and facial cranium. Includes the study of pathology affecting the skull. (15-22.5)

**RAD 245 Clinical Education 4****7 Sem Hrs**

Prerequisites: RAD 220, and RAD 225 each with a "C" (2.0) minimum grade. Concurrent enrollment in RAD 230, RAD 232, RAD 235, RAD 250 provides structured clinical experience necessary to perform radiographic procedures of the skull and facial cranium. Emphasizes correlation of all aspects of a radiograph procedure. (0-395)

**RAD 250 Clinical Seminar 4****1 Sem Hr**

Prerequisites: RAD 220, and 225 each with a "C" (2.0) minimum grade. Concurrent enrollment in RAD 230, RAD 232, RAD 235, RAD 245. Provides a clinical overview of radiographic procedures of the skull and facial cranium. Requires weekend and evening assignments. (15-0)

**RAD 260 Clinical Education 5****5 Sem Hrs**

Prerequisite: RAD 245 and RAD 250 each with a "C" (2.0) minimum grade. Provides structured clinical experience to perform advanced level radiographic procedures. Includes optional rotations through specialty areas and review for ARRT registry examination. Requires weekend and alternate shift assignments. (0-200)

**RAD 290-299 Special Projects in Radiography**



## RESIDENTIAL CONSTRUCTION COURSES

### RC 101 Construction Print Interpretation 3 Sem Hrs

Instruction in this course includes trade terminology and description of the various views of working drawings, pictorial drawings, and the basic procedures in development of these drawings. Also included is the interpretation of specifications and job information as they pertain to construction and layout. Credit may be earned in either RC 101 or SKCT 111 but not both. (45-0)

### RC 102 Building Materials 3 Sem Hrs

Introduces basic construction materials; properties, recommended use, space requirements, methods of finishing, building code implications, and energy conservation applications. Credit may be earned in RC 102 or ARC 101 but not in both. (45-0)

### RC 104 Construction Lab I 3 Sem Hrs

A study of the care and use of woodworking tools. Included is: tool terminology, purpose and uses of various tools and the functional principles of woodworking hand tools, including those which are power or pneumatically driven. (15-60)

### RC 105 Building Site Surveying 3 Sem Hrs

Studies fundamentals of site analysis, including utility services, metes and bounds, solar access and restrictions. Teaches elements of surveying including use of instruments, leveling, measurement of angles and distances, contours, location of site elements and development of a site plan from field data. Interprets engineering surveys, introduces landscape design, and studies computer aided design examples. Credit may be earned in RC 105 or ARC 221 but not in both. (45-0)

### RC 106 Concrete/Foundations 3 Sem Hrs

Prerequisite: RC 102. Studies practical methods and procedures of preparing and setting concrete forms for such areas as basement floors, garage floors, driveways, sidewalks, patios, etc. (45-15)

### RC 108 Construction Safety 2 Sem Hrs

Studies Occupational Safety and Health Administration (OSHA) safety and health standards required of residential builders. Includes training in first aid and cardiopulmonary resuscitation (CPR) to treat on-the-job inquiries. Students will produce a MIOSHA approved safety program. (30-0)

### RC 109 Residential Drafting 4 Sem Hrs

Teaches fundamentals of architectural drafting including linework emphasis, lettering design, symbol applications, multiview projections relative to architectural drawings, one point perspective, two point perspective, graphic design elements, and presentation of floor plans, sections and elevations. Studies space requirements and method of representing basic residential elements. Includes demonstrations and instruction in basic procedures of CAD. Credit may be earned in ARC 105 or RC 109 but not in both. (45-45)

### RC 114 Framing Square 4 Sem Hrs

Uses the framing square and speed square in construction. Credit may be earned in either RC 114 or SKCT 114 but not both. (60-0)

### RC 200 Construction Contracting Rules and Regulations 3 Sem Hrs

Introduction to contracting laws, rules, and regulations as they apply to residential builders. Covers builder's law, builder's license, insurance, deeds and abstracts, loans and land development. (45-0)

### RC 201 Rough and Outside Framing 4 Sem Hrs

Prerequisite: RC 104. Instruction in the techniques of construction used in all phases of framing and exterior finishing. (30-60)

### RC 202 Building Materials Estimation 3 Sem Hrs

Prerequisite: RC 101. Introduces methods and procedures commonly used in determining the costs of construction materials. Credit may be earned in RC 202 or ARC 204 but not in both. (45-0)

### RC 203 Construction Laboratory II 2 Sem Hrs

Prerequisites: RC 104 and 114. A course designed to allow time for practical application of the various construction procedures that are typically encountered on the job. Problem solving is a feature of this course. (15-60)

### RC 204 Inside Finishing and Hardware 4 Sem Hrs

Prerequisites: RC 104 and RC 114. Includes principles of interior construction, joinery and installation, and finishing of all types of interior trim. (45-45)

### RC 205 Cabinet Making and Millwork 5 Sem Hrs

Prerequisite: RC 104. Studies the construction, placement, and installation procedures of cabinets used in residential buildings. (45-60)

### RC 206 Plumbing, Heating, and Electrical Equipment 3 Sem Hrs

Prerequisite: RC 101. Designed to study equipment installation as it pertains to construction and carpentry. Credit may be earned in RC 206 or ARC 111 but not in both. (45-0)

### RC 211 Elements of Structural Design 2 Sem Hrs

Prerequisite: MTH 097 or equivalent Asset/Compass scores. Bridges the gap of understanding between engineering and building contractors. Identifies the weights of construction materials. Analyzes loads, stresses, and deflections of beams, floor joists, roof trusses and columns. Provides basic design experience in wood, steel, and concrete. Credit may be earned in RC 211 or ARC 211, but not in both. (30-0)

### RC 212 Building Systems Components 3 Sem Hrs

Provides a comprehensive overview of the various types of construction design and structural capabilities. Covers framing techniques and the application of relevant materials. Design and application of different types of interior and exterior materials are stressed. (45-15)

### RC 290-299 Special Projects in Residential Construction

## REFRIGERATION/HEATING & AIR CONDITIONING COURSES

### RHA 121 Fundamentals of Refrigeration & A/C 3 Sem Hrs

Introduces the mechanical refrigeration cycle as it applies to residential and light commercial refrigeration and air conditioning equipment. Focuses on the functions of individual components, and develops basic skills in using various tools and related equipment. Credit may be earned in either RHA 121 or SKPT 121, but not both. (35-10)

### RHA 122 Refrigeration & A/C Service I 3 Sem Hrs

Prerequisites: RHA 121. Covers common types of domestic refrigerators, dehumidifiers and portable air-conditioners with particular attention to principles of construction and operation of complete refrigeration systems. Presents theory and principles underlying repairing and practical shop work, through classroom demonstrations and lab experiments. Credit may be earned in either RHA 122 or SKPT 122, but not both. (35-10)

### RHA 123 Commercial Refrigeration I 3 Sem Hrs

Prerequisite: RHA 122. Develops understanding and basic skills in the servicing of commercial units such as walk-ins, reach-ins, display cases and commercial ice makers. Emphasizes refrigeration system components and piping practices. Credit may be earned in either RHA 123 or SKPT 123, but not both. (35-10)

### RHA 124 Refrigeration & A/C Service II 3 Sem Hrs

Prerequisite: RHA 122. Develops understanding and operational skills in trouble shooting domestic refrigeration and air conditioning systems. Focuses on the electrical components and system parts in frost-free, conventional and cyclematic units, and portable air conditioning units. Credit may be earned in either RHA 124 or SKPT 124, but not both. (35-10)

**RHA 125 Commercial Refrigeration II** 3 Sem Hrs  
Prerequisite: RHA 123. Builds operational skills in servicing of commercial units such as walk-ins, reach-ins, display cases and commercial icemakers. Emphasizes electricity and electrical components and troubleshooting. Credit may be earned in either RHA 125 or SKPT 125, but not both. (35-10)

**RHA 135 Heating System Fundamentals** 3 Sem Hrs  
Introduces various heating systems. Through lecture and demonstration, students understand the principles of heating systems and duct design. Reviews indoor air quality enhancements. (45-0)

**RHA 136 Heating Service Fundamentals** 3 Sem Hrs  
Prerequisite: RHA 135. Introduces service on gas, fuel oil, and electric heating apparatus. Focuses on system mechanics and electrical circuits. Students gain basic skills on proper service procedures and safety. (35-10)

**RHA 140 Applied Electricity I** 3 Sem Hrs  
Teaches students beginning electricity. Uses non-mathematical treatment of basic AC (alternating current) circuits. Includes introductory schematic symbols and circuits, Ohm's Law and Power formulas, series, parallel and simple combination circuits (not using Kirchoff, Thevenin, or Norton loop analysis), magnetism, electromagnetism, lighting and timing circuits. Includes hands-on circuit construction. Credit may be earned in RHA 140 or SKET 106 but not both. (45-0)

**RHA 142 Sheetmetal Layout I** 2 Sem Hrs  
Develops geometrical structures, intersections by radial and triangulation methods of sheetmetal layout, the drawing of development layouts and the forming of actual models with sheetmetal. Credit may be earned in RHA 142 or SKMT 171, but not both. (30-30)

**RHA 150 Refrigerant Certification** 1 Sem Hrs  
Studies E.P.A. mandates refrigerant recovery instruction and testing. (15-0)

**RHA 290-299 Special Projects in Refrigeration/Heat & Air Conditioning Courses**

## RESPIRATORY CARE COURSES

**RT 100 Basic Sciences for Respiratory Care** 2 Sem Hrs  
Prerequisite: High school algebra or MTH 107 with "C" (2.0) minimum grade within the past five years. Introduces the basic principles of math, chemistry, and physics utilized in the field of respiratory care. Emphasis is placed on the physical and chemical principles relating to liquids and gases as they provide a foundation for the study of respiratory care. (30-0)

**RT 117 Basic Respiratory Care I** 3 Sem Hrs  
Prerequisite: Admission to the Respiratory Care Program. RT 118, RT 121, RT 126, and RT 131 must be taken concurrently. Presents the theory and application of skills required for the delivery of the basic respiratory care modalities of medical gases, humidity, and aerosol therapy. Emphasizes treatment of adult and pediatric patients with application to specific disease states. (39-12)

**RT 118 Basic Respiratory Care II** 3 Sem Hrs  
Prerequisite: Admission to the Respiratory Care Program. RT 117, RT 121, RT 126, and RT 131 must be taken concurrently. Presents the theory and application of skills required to control transmissible diseases, to perform an appropriate physical assessment of the respiratory care patient, and for the delivery of the basic respiratory care modalities of pharmacology, incentive spirometry, and chest physical therapy. Emphasizes treatment related to adult and pediatric patients with application to the specific disease states. (38-14)

**RT 121 Orientation to RC** 2 Sem Hrs  
Prerequisite: Admission to the Respiratory Care Program. RT 117, RT 118, RT 126, and RT 131 must be taken concurrently. Introduces the role of a professional respiratory therapist from an historical, professional, and management perspective as well as the clinical setting. Includes CPR for the Professional Rescuer. (15-30)

**RT 126 Clinical Education I** 3 Sem Hrs  
Prerequisite: Admission to the Respiratory Care Program. RT 117, RT 118, RT 121, and RT 131 must be taken concurrently. Provides the opportunity in the clinical setting to apply and practice skills learned. (0-120)

**RT 131 Artificial Airway Care and Manual Ventilation** 2 Sem Hrs  
Prerequisite: Admission to the Respiratory Care Program. RT 117, RT 118, RT 121, & RT 126 must be taken concurrently. Presents the theory and application of skills required to provide care of the patient with an artificial airway and manual ventilation. (26-8)

**RT 132 Adult Ventilatory Care** 3 Sem Hrs  
Prerequisites: RT 117, RT 118, RT 121, RT 126, and RT 131. RT 135, RT 146, and RT 149 must be taken concurrently. Presents the theory and application of skills required to provide adult mechanical ventilatory care. (39-12)

**RT 135 Diagnostics and Special Procedures** 4 Sem Hrs  
Prerequisites: RT 117, RT 118, RT 121, RT 126, & RT 131. RT 132, RT 146, and RT 149 must be taken concurrently. Presents the theory and application of skills required to perform arterial and mixed venous blood sampling and analysis, basic pulmonary function testing, and to interpret the results of and make recommendations for care based on these diagnostic procedures. Emphasizes the respiratory therapist's role in chest and lateral neck x-ray evaluation, bronchoscopy, and chest tube drainage. (54-12)

**RT 146 Clinical Education II** 6 Sem Hrs  
Prerequisites: RT 117, RT 118, RT 121, RT 126 and RT 131. RT 132, RT 135, RT 149 must be taken concurrently. Provides the opportunity to apply clinical skills with emphasis on the critically ill patient. (0-240)

**RT 149 Clinical Ed 2 Seminar** 1 Sem Hr  
Prerequisites: RT 117, RT 118, RT 121, RT 126, and RT 131. RT 132, RT 135, and RT 146 must be taken concurrently. Provides the opportunity to integrate the classroom and clinical activities of the concurrent courses in a seminar format. (15-0)

**RT 150 Cardiovascular Evaluation and Monitoring** 3 Sem Hrs  
Prerequisites: RT 132, RT 135, RT 146, & RT 149. Presents the theory and application of skills required to provide adult hemodynamic and ECG monitoring and interpretation. (41-8)

**RT 160 Transition-Technician to Therapist** 2 Sem Hrs  
Completion of an AMA-approved Respiratory Therapy Technician Program within the last 2 years or completion of a Technician program with at least one year of work experience in the last 2 years; or certification (CRTT) by the National Board of Respiratory Care with at least 3 years of work experience in the last 5 years. Must be taken concurrently with RT 235. Emphasis will be upon material in RT 116, 133, and 134. Successful completion of this course and RT 235 will enable technicians to enter the second year of the therapist program. Will only be offered if space in the program permits. (30-0)

**RT 207 Cardiopulmonary Pathophysiology** 3 Sem Hrs  
Prerequisites: RT 150 or RT 150 and RT 160 for the transition student. RT 211, RT 212, RT 214, RT 216, RT 229, RT 226 must be taken concurrently. Presents the cause, clinical presentation, and treatment of common cardiopulmonary diseases. (45-0)

**RT 211 Advanced Cardiopulmonary Physiology** 3 Sem Hrs  
Prerequisites: RT 150 or RT 150 and RT 160 for the transition student. RT 207, RT 212, RT 214, RT 216, RT 229, & RT 226 must be taken concurrently. Presents the study of advanced cardiopulmonary physiology as the basis for evaluation and treatment of cardiopulmonary pathophysiology. (45-0)

**RT 212 Advanced Ventilator Management** 2 Sem Hrs  
Prerequisites: RT 150 or RT 150 and RT 160 for the transition student. RT 207, RT 211, RT 214, RT 216, RT 229, & RT 226 must be taken concurrently. Presents the advanced theory and application of skills required to monitor, manage, and wean patients on mechanical ventilation. (26-8)



**RT 214 Seminar I 1 Sem Hr**  
Prerequisites: RT 150 or RT 150 and RT 160 for the transition student. RT 207, RT 211, RT 212, RT 216, RT 226, & RT 229 must be taken concurrently. Provides an opportunity to research, write a report, and make an oral presentation on an area of interest in the field of respiratory care. (15-0)

**RT 216 Rehabilitation and Home Care 1 Sem Hr**  
Prerequisites: RT 150 or RT 150 and RT 160 for the transition student. RT 207, RT 211, RT 212, RT 214, RT 229 and RT 226 must be taken concurrently. Presents the theory and application of skills required to provide pulmonary rehabilitation and home care. (13-4)

**RT 226 Clinical Education III 6 Sem Hrs**  
Prerequisites: RT 150 or RT 150 and RT 160 for the transition student. RT 207, RT 211, RT 212, RT 214, RT 216, & RT 229 must be taken concurrently. Provides the opportunity to review the theory and practice clinical skills. (0-240)

**RT 229 Clinical Ed 3 Seminar 1 Sem Hr**  
Prerequisites: RT 150 or RT 150 and RT 160 for the transition student. RT 207, RT 211, RT 212, RT 214, RT 216, and RT 226 must be taken concurrently. Provides the opportunity to integrate the classroom and clinical activities of the concurrent courses in a seminar format. (15-0)

**RT 231 Maternal and Neonatal Respiratory Care 2 Sem Hrs**  
Prerequisite: RT 207, 211, 212, 214, and 216, 226 and 229 each with a "C" (2.0) minimum grade. RT 234, 240, 244 and 246 must be taken concurrently. This course will cover the respiratory changes in the mother during pregnancy, labor, and delivery. Fetal development, the birth process, cardiovascular and respiratory changes after birth, neonatal pathophysiology and neonatal ventilators are also covered. (27-6)

**RT 234 Seminar II 1 Sem Hr**  
Prerequisites: RT 207, RT 211, RT 212, RT 214, RT 216, RT 226 and RT 229 each with a "C" (2.0) minimum grade. RT 231, RT 240, RT 244 and RT 246 must be taken concurrently. Provides an opportunity to research, write a report, and make an oral presentation on any area of interest in the field of respiratory care. (15-0)

**RT 240 Advanced Respiratory Care Pharmacology 3 Sem Hrs**  
Prerequisite: RT 207, RT 211, RT 212, RT 214, RT 216, RT 226 and RT 229 each with a "C" (2.0) minimum grade. RT 231, RT 234, RT 244 and RT 246 must be taken concurrently. Presents the theory and application of advanced respiratory care pharmacology as it relates to cardiopulmonary pathophysiology. (45-0)

**RT 244 Optional Rotation/Special Project 1 Sem Hr**  
Prerequisites: RT 207, RT 211, RT 212, RT 214, RT 216, RT 226 and RT 229 each with a "C" (2.0) minimum grade. RT 231, RT 240, RT 234, and RT 246 must be taken concurrently. Provides an opportunity to choose a rotation or special project to meet their personal goals in the field of respiratory care. Emphasizes the design, completion, and summarization of the project. (15-0)

**RT 246 Comprehensive Clinical Education 8 Sem Hrs**  
Prerequisites: RT 207, RT 211, RT 212, RT 214, RT 216, RT 226 and RT 229 each with a "C" (2.0) minimum grade. RT 231, RT 240, RT 234, and RT 244 must be taken concurrently. Provides the opportunity to apply all of the knowledge and skills presented in the program. Emphasizes the integration of all levels of knowledge and skills as a prelude to functioning as a graduate respiratory therapist. (0-320)

**RT 290-299 Special Projects in Respiratory Care**

## RUSSIAN COURSES

**RUS 111 Russian One 4 Sem Hrs**  
Acquisition of proper pronunciation, basic grammatical structures and vocabulary of modern spoken and written Russian by means of oral practice, reading of simple texts, and written exercises. (60-0)

**RUS 290-299 Special Projects in Russian**

## INTERDISCIPLINARY SCIENCE COURSES

**SCI 099 Foundation for Science 4 Sem Hrs**  
Develops competency in content and skills in college science classes and *intended for students unsure of adequacy of preparation for college science*. Includes use of scientific method, measurement practices in metrics, communicating and presenting scientific data, classification techniques, spatial relationships, and maps. Presents methods for improving science study skills, note taking, data recording and analysis. (Cannot be counted toward Natural Science or lab credit. Does not count towards graduation credit) (75-15)

**SCI 250 Research Project in Science 2-6 Sem Hrs**  
Prerequisites: CHM 112 or CHM 230. Designed to provide science student with opportunity to design, carry out a science research project under the supervision of a faculty advisor. A research report will be prepared that includes a library search, problem identification, procedure documentation, data, data analysis, and conclusion. Evaluation will be handled by a team of faculty and/or experts. Credits awarded will be based on the nature of the project and its evaluation. Two credits are minimum requirement. Beneficial to all science majors in Biology, Chemistry, and Engineering. (90-0)

**SCI 290-299 Special Projects in Interdisciplinary Science**

## SURGICAL FIRST ASSISTANT COURSES

**SFA 350 Advanced Surgical Anatomy I 3 Sem Hrs**  
Prerequisites: Admission to Surgical First Assistant Program and concurrent enrollment in SFA 351 and SFA 352. Studies regional anatomy related to surgical procedures including all tissue structure, head and neck, upper extremities, trunk, and spinal cord. Includes introduction to basic embryology, histology, and pathology, and the review of relevant physiology. Credit may be earned in SFA 350 or SFA 301, but not in both. (45-0)

**SFA 351 Anesthesia and Surgical Pharmacology 2 Sem Hrs**  
Prerequisites: Admission to Surgical First Assistant program and concurrent enrollment in SFA 350 and SFA 352. Reviews anesthetic agents and their methods of administration, and other drugs used during surgery and emergencies, including adverse reactions. Emphasizes how surgical procedures may affect and be affected by pharmacologic agents. Credit may be earned in SFA 351 or SFA 305, but not in both. (30-0)

**SFA 352 Fundamental Techniques 5 Sem Hrs**  
Prerequisite: Admission to SFA program and concurrent enrollment in SFA 350 and SFA 351. Theory and practice of pre-operative and post-operative functions and techniques of a Surgical First Assistant. Credit may be earned in SFA 352 or SFA 303, but not in both. (75-0)

**SFA 360 Advanced Surgical Anatomy II 3 Sem Hrs**  
Prerequisites: SFA 350, SFA 351, and SFA 352, and concurrent enrollment in SFA 361, SFA 362, and SFA 365. Studies regional anatomy related to surgical procedures including thorax, abdomen, pelvis, and lower extremities. Credit may be earned in SFA 360 or SFA 312, but not in both. (45-0)

**SFA 361 Applied Bioscience 3 Sem Hrs**  
Prerequisites: SFA 350, SFA 351, and SFA 352, and concurrent enrollment in SFA 360, SFA 362, and SFA 365. Examines physiological processes as applied to measurement and intervention techniques in surgical patients. Reviews surgical microbiology and infection control. Credit may be earned in SFA 361 or SFA 318, but not in both. (45-0)

**SFA 362 Professional Conduct 1 Sem Hr**  
Prerequisites: SFA 350, SFA 351, and SFA 352, and concurrent enrollment in SFA 360, SFA 361, and SFA 365. Explores the interpersonal, legal, and ethical aspects of surgical patient care, recognition of surgical complications, and appropriate actions. Credit may be earned for SFA 362 or SFA 316, but not in both. (15-0)



**SFA 365 Clinical Preceptorship I** **3 Sem Hrs**  
Prerequisites: SFA 350, SFA 351, and SFA 352, and concurrent enrollment in SFA 360, SFA 361, and SFA 362. Provides the student with clinical practice of basic surgical skills and techniques by individual assignment to a qualified preceptor surgeon who will provide direct supervision and guidance during each rotation, to include a specified minimum number of cases. These activities will be performed only as delegated tasks under the direct and immediate supervision of a responsible surgeon. Credit may be earned for SFA 365 or SFA 329, but not for both. (0-100)

**SFA 370 Clinical Preceptorship II** **7 Sem Hrs**  
Prerequisites: SFA 360, SFA 361, SFA 362, and SFA 365, and concurrent enrollment in SFA 371. Provides the student with clinical practice of basic surgical skills and techniques by individual assignment to a qualified preceptor surgeon who will provide direct supervision and guidance during each rotation, to include a minimum number of cases. These activities will be performed only as delegated tasks under the direct and immediate supervision of the responsible surgeon. Credit may be earned in SFA 370 or SFA 329, but not in both. (0-215)

**SFA 371 Epidemiology and Research** **3 Sem Hrs**  
Prerequisites: SFA 360, SFA 361, SFA 362, and SFA 365, and concurrent enrollment in SFA 370. Introduces the basic concepts and techniques of epidemiology and the terminology and protocols of research studies. (45-0)

## SOCIOLOGY COURSES

**SOC 157 Projects in Community Service** **1 Sem Hr**  
Student volunteers will be assigned in groups to assist agency staff in programs in the tri-city area working with populations of need. Students will be assigned on the basis of preferred interests. Supportive seminar will provide structure and supervision for an experience in the field of human services. Students may elect to take SOC 157, 158 and 159, however, only a total of three (3) credit hours can be earned in these courses. (15-30)

**SOC 158 Projects in Community Service** **2 Sem Hrs**  
Student volunteers will be assigned in groups to assist agency staff in programs in the tri-city area working with populations of need. Students will be assigned on the basis of preferred interests. Supportive seminar will provide structure and supervision for an experience in the field of human services. Students may elect to take SOC 157, 158, and 159, however, only a total of three (3) credit hours can be earned in these courses. (15-60)

**SOC 159 Projects in Community Services** **3 Sem Hrs**  
Student volunteers will be assigned in groups to assist agency staff in programs in the tri-city area working with populations of need. Students will be assigned on the basis of preferred interests. Supportive seminar will provide structure and supervision for an experience in the field of human services. Students may elect to take SOC 157, 158, and 159, however, only a total of three (3) credit hours can be earned in these courses. (15-90)

**SOC 161 Projects in Cross-Cultural Learning** **1 Sem Hr**  
Assigns student volunteers to either community agencies providing cross-cultural experiences or to an international work experience. Provides support seminars dealing with structure and background knowledge of the particular country involved. (A minimum of 30 hours volunteer placement is required). Credit may be earned in IHU 161 or SOC 161, but not both. (15-30)

**SOC 162 Projects in Cross-Cultural Learning** **2 Sem Hrs**  
Assigns student volunteers to either community agencies providing cross-cultural experiences or to an international work experience. Provides support seminars dealing with structure and background knowledge of the particular country involved. (A minimum of 60 hours volunteer placement is required.) Credit may be earned in IHU 162 or SOC 162, but not both. (15-60)

**SOC 211/211H Principles of Sociology** **3 Sem Hrs**  
An introduction to the scientific study of society and social behavior including the basic concepts, theories, and methods of sociology. (45-0)

**SOC 212 Social Problems** **3 Sem Hrs**  
Prerequisite: SOC 211. An analysis of contemporary social problems within the theoretical framework of social change, value conflicts, and social deviation; an attempt to examine resulting implications for social policy. (45-0)

**SOC 215 Sociology of Minority Groups (Inter-group Relations)** **3 Sem Hrs**  
Studies prejudice and discrimination against minority groups, primarily in the United States, using the sociological approach. Emphasizes the analysis of both causes and solutions to the problems of prejudice and discrimination. (45-0)

**SOC 216 The Black Experience** **4 Sem Hrs**  
A survey course presenting several aspects of Black life using an inter-disciplinary approach. The major units of study are Black culture, power and politics, Black family, business and economic development, and Black psychology. Each component will present an historical analysis as well as an overview of contemporary research and/or thought in the field. (60-0)

**SOC 221 Marriage and Family** **3 Sem Hrs**  
Prerequisites: SOC 211 or SOC 231 or PSY 211 or permission of instructor. A study of the family as an institution in society. Broad research approach encompassing aspects of historical and cross societal evidence of this institution as well as contemporary American pairing and child rearing practices. (45-0)

**SOC 230/230H Physical Anthropology and Archeology** **4 Sem Hrs**  
An introduction to the origin and evolution of humankind's physical and cultural development. Major emphases are on the evidence and theories of human evolution and a survey of Old World and New World archeology. This course may be taken as Social Science or Natural Science credit but cannot be counted as a lab science course. (60-0)

**SOC 231/231H Cultural Anthropology** **3 Sem Hrs**  
An introduction to humanity in its cultural setting. An emphasis will be given to the study of a diversity of non-industrialized cultures and the implications of that study for understanding our own culture. (45-0)

**SOC 233 Archaeology Field Methods** **2 Sem Hrs**  
Provides students with a guided field experience in the basic techniques of land site analysis. Introduces commonly used methods of surveying and mapping; excavation; dating; artifact and ecofact identification and conservation; data recording, including photography and scaled drawing; and site interpretation. Examines criteria for selecting techniques appropriate to specific site conditions. Emphasizes the Michigan prehistoric and historic context. Credit may be earned in HIS 233 or SOC 233 but not in both. (30-0)

**SOC 245 Death Education** **3 Sem Hrs**  
Concerned with an analysis of the nature of death. Attention is given to some of the philosophical, religious, cultural, biological, psychological, sociological, economic and legal aspects of death and dying. (45-0)

**SOC 250 Introduction to Social Work** **3 Sem Hrs**  
Introduces social work as a helping profession within the field of human services. Explores social work values, practice strategies, and helping skills in the context of the social welfare institution. Requires 45 hours of internship, which meets the experience requirement necessary for admittance to the social work program at transfer institutions (45-45)

**SOC 265 Third World Development** **4 Sem Hrs**  
An interdisciplinary description and analysis of processes and conditions which created and maintain the "third world." Population, physical environment, historical, political, social and economic factors will be addressed. Current concepts and development theories will be explored and applied. Credit may be earned in SOC 265 or GEO 255 but not in both. (60-0)



**SOC 268 International Studies in Sociology 1-4 Sem Hrs**  
The student will select a major institution of society for the purpose of comparative study. An analysis and comparison of that institution in preselected societies will be the major focus of the course. Includes classroom lectures, individual consultation and international field study. Expenses for field study must be borne by the student. By prior arrangement with appropriate faculty, students may also take International studies in the following disciplines: GEO 268, ECN 268, MGT 268 (or former GB 268) (60-0)

**SOC 279 Introduction to Social/Behavioral Science Research 3 Sem Hrs**  
Prerequisite: One of the following courses ECN 221, POL 103, POL 111, PSY 211, SOC 211 or permission of instructor. Introduces social and behavioral research utilizing a multi disciplinary approach. Shows how to formulate research questions, search the literature, select a research design, collect and analyze data, and draw useful conclusions. (45-0)

**SOC 280/280H Introduction to Social/Behavioral Science Research/Project 4 Sem Hrs**  
Prerequisite: One of the following courses ECN 221, POL 103, POL 111, PSY 211, SOC 211 or permission of instructor. Introduces social and behavioral research utilizing a multidisciplinary approach. Shows how to formulate research questions, search the literature, select a research design, collect and analyze data, and draw useful conclusions. Includes a research paper. (60-0)

**SOC 281 An Introduction of SPSS 1 Sem Hr**  
Prerequisite: Some statistics or research background or taking such a course, e.g., SOC 280, concurrently. Introduces the Statistical Package for the Social Sciences (SPSS), a comprehensive set of statistical tools for many types of data analysis. Emphasizes the basic procedures, commands, and tools of SPSS. Credit may be earned in SOC 281 or CPS 108 but not in both. (15-0)

**SOC 282H Seminar in Social Issues 3 Sem Hrs**  
Prerequisite: Honors program participant or permission of instructor. An integrated study involving exploration and development of critical thinking, analysis and problem-solving skills with an interdisciplinary approach focusing on a selected social issue. (45-0)

**SOC 290-299 Special Projects in Sociology**

**SOC 300 Interviewing, Counseling, and the Helping Relationship 3 Sem Hrs**  
Establishes beginning social work interviewing and relationship skills as well as awareness of the use of self in the helping relationship. Presents specific interviewing strategies for generalist social work practice. Includes student participation in practice sessions using role plays, videotapes and self awareness exercises. (45-0)

## SPANISH COURSES

**SPA 101 Hispanic Civilizations 2 Sem Hrs**  
An introduction to some basic concepts concerning educational systems, religious thought, marriage customs, attitudes toward death, role of man and woman, historical highlights, cultural and natural resources, and relevant contributions in the area of art, music, literature, foods, and clothing of the Spanish-speaking world (Europe, the Americas, and the U.S.A.). Course will be conducted in English. (30-0)

**SPA 105 Conversational Spanish - Introduction 2 Sem Hrs**  
Prerequisite: No previous formal study of Spanish. Designed to emphasize the acquisition of oral skills. Successful completion of SPA 105 and 106 is considered equivalent to the successful completion of Spanish One. (30-0)

**SPA 106 Conversational Spanish - Continuation 2 Sem Hrs**  
Prerequisite: SPA 105 or permission of instructor. A continuation of SPA 105 with more emphasis on reading and writing Spanish. Successful completion of SPA 105 and 106 is considered equivalent to the successful completion of Spanish One. (30-0)

**SPA 107 Spanish for Medical Personnel 1 Sem Hr**  
An introduction to conversational Spanish for medical personnel maximizing specific information, but holding the structure and extended vocabulary to just that need for basic communication. Handouts and audio-tapes will reinforce the material covered in class. (15-0)

**SPA 111 Spanish One 4 Sem Hrs**  
Prerequisite: No previous formal study of Spanish. Acquisition of proper pronunciation, Basic grammatical structures and vocabulary of modern spoken and written Spanish by means of oral-aural practice, reading of simple texts, and written exercises. (60-0)

**SPA 112 Spanish Two 4 Sem Hrs**  
Prerequisite: One year of high school Spanish or SPA 111. Continuation of SPA 111. (60-0)

**SPA 211 Spanish Three 4 Sem Hrs**  
Prerequisite: Two years of high school Spanish or SPA 112. Continued emphasis placed on proper pronunciation habits and on application of grammatical structures of modern spoken and written Spanish by means of oral-aural exercises, conversations, reading of Spanish prose, and written exercises. As much as possible, this class is conducted in Spanish. (60-0)

**SPA 212 Spanish Four 4 Sem Hrs**  
Prerequisite: SPA 211 or three years of high school Spanish. Continuation of Spanish Three. (60-0)

**SPA 268 International Studies in Spanish 1-4 Sem Hrs**  
Studies ancient, colonial and modern civilization in a Spanish-speaking country. Visits archeological and historical sites with unassigned time for individual interests. Student must meet all course and travel requirements in addition to paying tuition and expenses. (60-0)

**SPA 268A Central Mexico 2 Sem Hrs**  
Studies ancient, colonial and modern civilization in a Spanish-speaking country. Visits archeological and historical sites with unassigned time for individual interests. Student pays tuition plus all expenses. Credit may be earned in SPA 268A or 150, but not both. (30-0)

**SPA 268B Mayan Mexico 2 Sem Hrs**  
Studies ancient, colonial and modern civilization in a Spanish-speaking country. Visits archeological and historical sites with unassigned time for individual interests. Student pays tuition plus all expenses. Credit may be earned in SPA 151 or 268B, but not both. (30-0)

**SPA 275 Introduction of Hispanic Fiction 3 Sem Hrs**  
Prerequisite: Ability to speak and read Spanish (completion of fourth year of high school Spanish or fourth semester of college Spanish, or permission of the instructor). Reading, research, and discussion based on a study of representative literature of the Hispanic world (Europe, North America, and South America). Students will read, discuss, and write about three selected novels and/or plays under guided supervision. Course will be conducted in Spanish. (45-0)

**SPA 290-299 Special Projects in Spanish**

## SONOGRAPHY - SEE "DIAGNOSTIC MEDICAL SONOGRAPHY" COURSES

## SPEECH/ORAL COMMUNICATIONS COURSES

**SPH 099 Basic Communication Skills 3 Sem Hrs**  
Prerequisite: Demonstration of less than college ready scores in writing and reading on college assessment instrument. Improves language awareness, emphasizes self assessment/peer evaluation, oral expression, small group interaction, vocabulary enrichment and grammar skills. Does not earn credit toward graduation. (45-0)



**SPH 112/112H Fundamentals of  
Oral Communication**

**3 Sem Hrs**

The course offers training in the fundamental processes of oral expression, with an emphasis on speaking and listening as the coordination of perception and expression. The basic principles, components, and skills that will aid the individual in various communication situations are stressed. (45-0)

**SPH 114/114H Interpersonal Communications**

**3 Sem Hrs**

An introduction to the process of functions of perception, non-verbal behavior, self-concept roles and culture on human interaction in varying social settings. Emphasis is placed on helping the students increase their competence as a communicator in these situations. Various concepts on communication behavior are applied in the classroom. (45-0)

**SPH 202 Oral Communications for Managers**

**3 Sem Hrs**

Managers manage things; leaders lead people. This course focuses on organizational behavior; management behavior styles and team building; interpersonal communication; appraisal, disciplinary, motivational and counseling interviews; listening and nonverbal behavior; public speaking; and leadership and consensus decision making. Emphasis is placed on practical skills within the organization. (45-0)

**SPH 212 Listening**

**3 Sem Hrs**

Focus will be on the theory, behavior, and skills of listening. Course material will include discussion of: listener/speaker responsibility; physiological and psychological processes of listening; barriers and control methods; improvements; and the five types of listening devoted to nonverbal behavior with regard to seeing as listening. Persons who attain success in this course should benefit both interpersonally and professionally. (45-0)

**SPH 214 Discussion Techniques**

**3 Sem Hrs**

Prerequisite: A previous speech course or permission of the instructor. Designed to explain discussion as a means to better understanding and action in human affairs and to develop attitudes and skills which enable people to participate in discussion competently. A study of group leadership. (45-0)

**SPH 215 Introduction to Theatre**

**3 Sem Hrs**

Designed to give the student some insight into the various aspects of theatrical production. The purpose is to make the student a discriminating observer of dramatic production whether on stage, film, or the T.V. screen. Included in this study are play analysis and practical experience in acting, directing, scenery, and lighting. (45-0)

**SPH 216 Theatre History**

**3 Sem Hrs**

Introduces various historical areas of the theatre, from the ancient Greeks to the present. Emphasizes the development of the physical theatre, representative playwrights, and the development of actor and the director. (45-0)

**SPH 224 Nonverbal Communication**

**3 Sem Hrs**

Focuses on nonverbal communication as it relates to interpersonal social, business and professional behavior. Analyzes kinesics, facial affect, eye contact, body movement and posture, physical characteristics, haptics, chronemics, proxemics, artifacts and environment. Also discusses the prevalent theories underlying nonverbal behavior. (45-0)

**SPH 244 Family Communication**

**3 Sem Hrs**

Provides students with an understanding of interpersonal communication in the context of family systems. Studies family communication through the lens of family systems theory, rules, and interaction theory. Provides students the opportunity to apply and operationalize the theories through various assignments related to their family of origin, existing family, and family configurations in other cultures. (45-0)

**SPH 290-299 Special Projects in Speech/Oral Communications**

**SURGICAL TECHNOLOGY COURSES**

**ST 100 Introduction to Health Care Service**

**3 Sem Hrs**

Prerequisite: BIO 132 or concurrent enrollment in BIO 132. Presents the history of medicine, epidemiological methods, and current problems and trends in the health care system. Selected global health care issues are discussed. Includes professional, legal, and ethical aspects of a multi disciplinary care system. (45-0)

**ST 107 Pharmacology in the Operating Room**

**2 Sem Hrs**

Prerequisites: Admission to the Surgical Technology program plus concurrent enrollment in ST 110, 120, 130, 140. Introduction to anesthetic agents and other drugs commonly used in the operating room: their actions and uses, how they affect a surgical patient and how to observe for untoward reactions. (30-0)

**ST 110 The Surgical Patient**

**2 Sem Hrs**

Prerequisites: Admission to the Surgical Technology program plus concurrent enrollment in ST 107, 120, 130, 140. Basic concepts of operative patient care, such as preparation of patient for surgery, patient transportation, surgical incisions, wound healing, operative records, special procedures in the operating room, and the legal, moral and ethical responsibilities of surgical care. (30-0)

**ST 120 Fundamentals of Surgical Technology**

**6 Sem Hrs**

Prerequisites: Admission to the Surgical Technology program plus concurrent enrollment in ST 107, 110, 130, 140. Roles of surgical team members, sterilization and disinfection methods, surgical instruments, sutures and equipment, electrical safety, patient positioning and preparation, draping the sterile field, and care of supplies. Students begin to develop technical skills through laboratory practice; later operating room observational experiences are provided. (45-120)

**ST 130 Surgical Anatomy**

**4 Sem Hrs**

Prerequisites: Admission to the Surgical Technology program plus concurrent enrollment in ST 107, 110, 120, 140. Comprehensive regional study of human anatomy as encountered during surgery. Provides the basis for studies of surgical pathology, operative procedures and practical skills of surgical patient care. (45-45)

**ST 140 Operative Procedures**

**4 Sem Hrs**

Prerequisites: Admission to the Surgical Technology program plus concurrent enrollment in ST 107, 110, 120, 130. Selected commonly-performed types of surgical procedures; the pathology leading to surgical intervention, the purposes of the surgery, problems which may arise, and the consequences of the surgery for the patient will be discussed in addition to the basic techniques utilized during the procedure and any special instrumentation. (60-0)

**ST 200 Clinical Externship**

**12 Sem Hrs**

Prerequisites: ST 107, 110, 120, 130, 140 each with a minimum "C" (2.0) grade and consent of program coordinator. Concurrent enrollment in ST 201. Supervised clinical experience in hospital operating room suites. Clinical instructors will evaluate each student's progress in the theoretical, behavioral, and practical application of concepts of surgical technology. (0-540)

**ST 201 Operating Room Seminar**

**3 Sem Hrs**

Prerequisite: ST 107, 110, 120, 130, 140. Concurrent enrollment in ST 200. Patient-monitoring devices and diagnostic tests, abnormalities and correlations with surgical patient conditions, and surgery for traumatic injuries. Discussion of students' clinical experiences, the professional role of the Surgical Technologist, general review, and assigned research studies. (45-0)

**ST 290-299 Special Projects in Surgical Technology**



## SKILLED TRADES COURSES

### SKCN 110 Haas Turning Center

4 Sem Hrs

Prerequisite: MS 103 and MS 104, or SKTR 182; CAD 114 or SKCA 114; CNC 160 or SKCN 160, and CNC 201, or prior training of work experiences in machine tools, CAD, CNC programming, and carbide tooling. Emphasizes the programming methodology for producing quality parts using the HAAS CNC turning center programming language, including EIA/ISO programming, tooling setups, part setups, machining, and mental attitudes, includes parameters and maintenance. Uses the Haas SL-20 two-axis slant-bed rear turning center for demonstration and lab activity. Credit may be earned in either CNC 210 or SKCN 210, but not both. (57-3, 40 OJT)

### SKCA 114 AutoCAD Introduction

2 Sem Hrs

Uses AutoCAD software to draft two dimensional multi-view drawings and three dimensional wire frame constructions. Completes projects including arrays, blocks, assigned properties, notations, and dimensions. Acquires knowledge of the software, hardware and the MS-DOS operating system in the process of developing a Computer Aided Design and Drafting drawing for multi-pen plotting. Credit may be earned in either SKCA 114 or CAD 114 but not in both. (30)

### SKCN 110 Haas Turning Center

4 Sem Hrs

Prerequisite: MS 103 and MS 104, or SKTR 182; CAD 114 or SKCA 114; CNC 160 or SKCN 160, and CNC 201, or prior training or work experiences in machine tools, CAD, CNC programming, and carbide tooling. Emphasizes the programming methodology for producing quality parts using the HAAS CNC turning center programming language, including EIA/ISO programming, tooling setups, part setups, machining, and mental attitudes. Includes parameters and maintenance. Uses the Haas SL-20 two-axis slant-bed rear turning center.

### SKCN 160 Computer Numerical Control Programming I

3 Sem Hrs

Prerequisites: MS 114 or SKTR 181, and MATH 103 or MT 110 or SKMA 103, or basic knowledge of machining processes and trigonometry. Primary emphasis will be on manually programming machines with various capabilities, including absolute and incremental positional systems; tab sequential, word address, and menu driven formats; and machines with two- three-, four-, and five-axis control. Secondary emphasis on computer assisted programming. Credit may be earned in SKCN 160 or CNC 160 but not both. (45)

### SKCN 210 Haas Turning Center

4 Sem Hrs

Prerequisite: MS 103 and MS 104, or SKTR 182; CAD 114 or SKCA 114; CNC 160 or SKCN 160, and CNC 201, or prior training or work experiences in machine tools, CAD, CNC programming, and carbide tooling. Emphasizes the programming methodology for producing quality parts using the Haas CNC turning center programming language, including EIA/ISO programming, tooling setups, part setups, machining, and mental attitudes. Includes parameters and maintenance. Uses the Haas SL-20 two-axis slant-bed rear turning center for demonstration and lab activity. Credit may be earned in either CNC 210 or SKCN 210, but not both (57-3,40 OJT)

### SKCN 211 Mitsubishi 410 Control

4 Sem Hrs

Prerequisites: CAD 114 or SKCA 114, MS 115 or SKTR 182, CNC 160 or SKCN 160, and CIS 118 or prior experience. Teaches program methodology to produce quality parts using Mitsubishi 410 EIA/ISO language, including tooling setups, and machining with secondary emphasis on parameters and maintenance. Uses Saginaw Machine Systems Accu-Cell 410 two-axis flat-bed front turning center for demonstration and lab activities. Credit may be earned in CNC 211 or SKCN 211 but not in both. (57-3,40 OJT)

### SKCN 212 Heidenhain TNC-151 Control

4 Sem Hrs

Prerequisites: CAD 114 or SKCA 114, MS 115 or SKTR 182, CNC 160 or SKCN 160, and CIS 118 or prior experience. Teaches program methodology to produce quality parts using the Heidehain TNC-151 Dialog or EIA/ISO languages, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the Bridgeport Series II Interact II three-axis vertical milling machine for lab and demonstration. Credit may be earned in SKCN 212 or CNC 212 but not in both. (57-3, 40 OJT)

### SKCN 213 OSP-5000 LG Control

4 Sem Hrs

Prerequisites: CAD 114 or SKCA 114, MS 115 or SKTR 182, CNC 160 or SKCN 160, and CIS 118 or prior experience. Teaches programming methodology to produce quality parts using the OSP-5000 LG EIA/ISO language, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the Okuma LB-15 two-axis slant-bed rear turning center for demonstration and lab activities. Credit may be earned in SKCN 213 or CNC 213 but not both. (57-3, 40 OJT)

### SKCN 214 Anilam GXM Control

4 Sem Hrs

Prerequisites: CAD 114 or SKCA 114, MS 115 or SKTR 182, CNC 160 or SKCN 160, and CIS 118 or prior experience. Teaches programming methodology to produce quality parts using the Anilam GXM EIA/ISO language, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the YCM Supermax 40 three-axis vertical milling machine for lab and demonstration. Credit may be earned in SKCN 214 or CNC 214 but not in both. (57-30,40 OJT)

### SKCN 216 Mazatrol M-32/M-2 Control

4 Sem Hrs

Prerequisites: CAD 114 or SKCA 114, MS 115 or SKTR 182, CNC 160 or SKCN 160, and CIS 118 or prior experience in CAD, machine tools, CNC programming, and personal computers and DOS. Emphasizes the programming methodology for producing quality parts using the Mazak M-32/M-2 Conversational programming language with secondary emphasis on tooling setups, part setups, and machining. Uses a Griffo Brothers, Inc. software package including: GB\DataEntry M-32, GB\GeoEntry M-32, GB\DataTransfer, GB\DataPrint M-32, and GB\DataTranslate M-32. Utilizes Delta College's Mazak VQC-15/40 M-2 four-axis double-column vertical machining center for program testing as well as employer's CNC equipment. Credit may be earned in SKCN 216 or CNC 216 but not both. (57-3, 40 OJT)

### SKCN 217 Japax JAPT 3J Control

4 Sem Hrs

Prerequisites: CNC 212 or SKCN 212, or CNC 214 or SKCN 214, or CNC 216 or SKCN 216 or prior experience. Teaches the programming methodology for producing quality parts using the JAPT 3J EIA/ISO language, including wire alignment, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the Japax LV3 four-axis wire electrical discharge machine (EDM) for lab and demonstration. Credit may be earned in SKCN 217 or CNC 217 but not in both. (57-3,40 OJT)

### SKCN 218 Boston Digital SPC-II Control

4 Sem Hrs

Prerequisite: CNC 216 or SKCN 216, or prior experience. Teaches programming methodology to produce quality parts using the Boston Digital SPC-II EIA/ISO language, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the Boston Digital BostoMatic 1000 five-axis vertical machining system for lab and demonstration. Credit may be earned in SKCN 218 or CNC 218 but not in both. (57-3,40 OJT)

### SKCN 219 Haas Machining Center

4 Sem Hrs

Prerequisite: MS 103 and MS104, or SKTR 182; and CAD 114 or SKCA 114; CNC 160 or SKCN 160; and CNC 201, or prior training or work experiences in machine tools. CAD, CNC programming, and carbide tooling. Emphasizes the programming methodology for producing quality parts using the Haas CNC machining center programming language, including EIA/ISO programming, tooling setups, part setups, machining, and mental attitudes. Includes parameters and maintenance. Uses the Haas VF-OE four-axis vertical machining center for demonstration and lab activity. Credit may be earned in either CNC 219 or SKCN 219, but not both (57-3,40 OJT)



**SKCN 221 Surfcam I****4 Sem Hrs**

Prerequisites: CAD 114 or SKCA 114, MS 115 or SKTR 182, CNC 160 or SKCN 160, and CIS 118 or equivalent programming experience. Teaches off-line programming experience. Teaches off-line programming software for two-axis lathe work, up to four-axis mill work, and up to four-axis wire EDM work, operating on a PC and able to download to the General Numeric 10TF control on the MHP MTC-3 turning center, JAPT 3J control on the Japax wire EDM, as well as some of the other machining equipment. Emphasizes the creation of error free part programs using the Surfcam programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the turning center, mill, machining center, or wire EDM. Credit may be earned in SKCN 221 or CNC 221 but not in both. (54-3, 40 OJT)

**SKCN 223 TM-APT-GL****4 Sem Hrs**

Prerequisites: CAD 114 or SKCA 114, MS 115 or SKTR 182, CNC 160 or SKCN 160, and CIS 118 or equivalent programming experience. Teaches off-line programming software for two-axis lathe work, operating on an Okuma TM-APT-G programming terminal downloading to the OSP-5000 LG control on the Okuma LB-15 turning center. Emphasizes the creation of error free part programs using the TM-APT-GL programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the turning center. Credit may be earned in SKCN 223 or CNC 223, but not both. (57-3,40 OJT)

**SKCN 225 Mastercam****4 Sem Hrs**

Prerequisites: CAD 114 or SKCA 114, MS 115 or SKTR 182, CNC 160 or SKCN 160 and CIS 118 or equivalent programming experience. Uses an off-line programming software for up to four-axis lathe work, up to five-axis mill work, and up to four-axis wire EDM work, operating on a PC and downloading to the SPC-II control on the BostoMatic machining system, JAPT 3J control on the Japax wire EDM, as well as some other machining equipment. Emphasizes the creation of error free part programs using the Mastercam programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the turning center, mill, machining center/system, or wire EDM. Credit may be earned in SKCN 225 or CNC 225 but not in both. (57-3,40 OJT)

**SKCN 226 CAM M-32/M-2****4 Sem Hrs**

Prerequisites: CAD 114 or SKCA 114, MS 115 or SKTR 182, CNC 160 or SKCN 160, and CIS 118 or equivalent programming experience. Teaches programming methodology to produce error free programs using the Mazak M-32/M-2 EIA/ISO programming language on a PC with secondary emphasis on tooling setups, part setups, machining, and downloading to the Mazak VQC-15/40 M-2 four-axis double column vertical machining center using the Mazak CAM M-2 Programming software. Credit may be earned in SKCN 226 or CNC 226 but not in both. (57-3,40 OJT)

**SKCN 227 XL/NC****4 Sem Hrs**

Prerequisites: CAD 114 or SKCA 114, MS 115 or SKTR 182, CNC 160 or SKCN 160, and CIS 118 or equivalent programming experience. Uses an off-line programming software for two-axis lathe work, up to four-axis mill work, and up to four-axis wire EDM work operating on a PC downloading to the General Numeric 10TF control on the MHP MTC-3 turning center, JAPT 3J control on the Japax LV3 wire EDM, as well as some of the other machining equipment. Emphasizes the creation of error free part programs using the XL/N"C" programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the turning center, mill, or machining center/system. Credit may be earned in SKCN 227 or CNC 227 but not in both. (57-3,40 OJT)

**SKCN 250 Advanced Haas Turning Center****4 Sem Hrs**

Prerequisite: CNC 210 or SKCN 210, or prior training or work experience with Haas machining centers. Emphasizes canned cycles and subprograms, plus all aspects of producing quality parts using the Haas turning center programming language, including tooling setups, part setups, machining, and mental attitudes. Includes parameters and maintenance. Uses the Haas SL-20 two-axis slant-bed rear turning center for demonstration and lab activity. Credit may be earned in either CNC 250 or SKCN 250, but not both. (57-3, 40 OJT)

**SKCN 252 Heidenhain TNC-151 Control, Advanced****4 Sem Hrs**

Prerequisite: CNC 212 or SKCN 212, or equivalent programming experience. Emphasizes canned cycles and subprograms, plus all aspects of producing quality parts using the Heidenhain TNC-151 Dialog or EIA/ISO control, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the Bridgeport Series II Interact II three-axis vertical milling machine for lab and demonstration. Credit may be earned in SKCN 222 or CNC 222 but not in both. (57-3, 40 OJT)

**SKCN 253 OSP-5000 LG Control, Advanced****4 Sem Hrs**

Prerequisite: CNC 213 or SKCN 213, or equivalent programming experience. Teaches canned cycles and subprograms, plus all aspects of producing quality parts using the OSP-5000 LG EIA/ISO control, including tooling setups, part setups, and machining with secondary emphasis is on parameters and maintenance. Uses the Okuma LB-15 two-axis slant-bed rear turning center for lab and demonstration. Credit may be earned in SKCN 223 or CNC 223 but not in both. (57-3,40 OJT)

**SKCN 254 Anilam GXM Control Advanced****4 Sem Hrs**

Prerequisite: CNC 214 or SKCN 214, or equivalent programming experience. Emphasizes canned cycles and subprograms, plus all aspects of producing quality parts using the Anilam GXM EIA/ISO control, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the YCM Supermax 40 three-axis vertical milling machine for lab and demonstration. Credit may be earned in SKCN 224 or CNC 224 but not in both. (57-3,40 OJT)

**SKCN 256 Mazatrol M-32/M-2 Control, Advanced****4 Sem Hrs**

Prerequisite: CNC 216 or SKCN 216, or equivalent programming experience. Teaches canned cycles, subprograms, and programming from CAD files using the Mazak M-32/M-2 conversational programming language with secondary emphasis on parameters and maintenance. Uses the Mazak VQC-15/40 M-2 four-axis double column vertical machining center for lab and demonstration. Credit may be earned in SKCN 256 or CNC 256 but not in both. (57-3,40 OJT)

**SKCN 257 Japax JAPT 3J Control Advanced****4 Sem Hrs**

Prerequisite: CNC 217 or SKCN 217, or equivalent programming experience. Teaches canned cycles and subprograms, plus all aspects of producing quality parts using the JAPT 3J EIA/ISO control, including wire alignment, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the Japax LV3 four-axis wire electrical discharge machine (EDM) for lab and demonstration. Credit may be earned in SKCN 227 or CNC 227 but not in both. (57-3,40 OJT)

**SKCN 258 Boston Digital SPC-II Control Advanced****4 Sem Hrs**

Prerequisite: CNC 218 or SKCN 218, or equivalent programming experience. Teaches canned cycles and subprograms, plus all aspects of producing quality parts using the Boston Digital SPC-II EIA/ISO control, including tooling setups, part setups, and machining with secondary emphasis on parameters and maintenance. Uses the BostoMatic 1000 five-axis vertical machining system for lab and demonstration. Credit may be earned in SKCN 228 or CNC 228 but not in both. (57-3,40 OJT)

**SKCN 259 Advanced Haas Machining Center****4 Sem Hrs**

Prerequisite: CNC 219 or SKCN 219, or prior training or work experience with Haas machining centers. Emphasizes canned cycles and subprograms, plus all aspects of producing quality parts using the Haas machining center programming language, including tooling setups, part setups, machining, and mental attitudes. Includes parameters and maintenance. Uses the HAAS VF-OE four-axis machining center for demonstration and lab activity. Credit may be earned in either CNC 259 or SKCN 259, but not both. (57-3, 40 OJT)



- SKCN 261 Surfcam II** 4 Sem Hrs  
Prerequisites: CNC 221 or SKCN 221, or equivalent programming experience. Teaches the advanced powers of Concept software for more intricate programming of two-axis lathe work, up to five-axis mill work, and up to four-axis wire EDM work, operating on a PC able to download to the General Numeric 10TF control on the MHP MTC-3 turning center, JAPT 3J control on the Japax LV3 wire EDM, as well as some of the other machining equipment. Emphasizes the creation of error free part programs using the SURFCAM programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the turning center, mill, machining center, or wire EDM. Credit may be earned in SKCN 261 or CNC 261 but not both. (100)
- SKCN 263 TM-APT-GL ADVANCED** 4 Sem Hrs  
Prerequisites: CNC 223 or SKCN 223, or equivalent programming experience. Teaches the advanced powers of TM-APT-GL software for more intricate programming of two-axis lathe work, operating on an Okuma TM-APT-G programming terminal and downloading to the OSP-5000 LG control on the Okuma LB\*15 turning center. Emphasizes the creation of error free part programs using the TM-APT-GL programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the turning center. Credit may be earned in SKCN 263 or CNC 263 but not both. (57-3,40 OJT)
- SKCN 265 Mastercam Advanced** 4 Sem Hrs  
Prerequisites: CNC 225 or SKCN 225, or equivalent programming experience. Teaches the advanced powers of Mastercam software for more intricate programming of up to four-axis lathe work, up to five-axis mill work, and up to four-axis wire EDM work, operating on a PC and downloading to the SPC-II control on the BostoMatic machining system, JAPT 3J control on the Japax wire EDM, as well as other machining equipment. Emphasizes the creation of error free part programs using the Mastercam programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the turning center, mill, machining center/system, or wire EDM. Credit may be earned in SKCN 265 or CNC 265 but not both. (57-3,40 OJT)
- SKCN 266 Advanced Cam M-32/M2** 4 Sem Hrs  
Prerequisites: CNC 226 or SKCN 226, or equivalent experience. Teaches the use of macros, macro programming methodology, macro call statements, and nesting using the Mazak M-32/M-2 EIA/ISO programming language with secondary emphasis on parameters and maintenance. Software is ASCII text editor and a Griffo Brothers, Inc. GB\DataEntry M-32, GB\GeoEntry M-32, GB\DataTransfer, GB\DataPrint M-32, and GB\DataTranslate M-32 running on a PC. Uses the Mazak VQC-15/40 M-2 four-axis double column vertical machining center for demonstration and lab. Credit may be earned in SKCN 266 or CNC 266 but not both. (57-3,40 OJT)
- SKCN 270 ACU.CARV Advanced** 4 Sem Hrs  
Prerequisite: CNC 230 or SKCN 230, or equivalent programming experience with the ACU.CARV software. Teaches advanced powers of the ACU.CARV software for more intricate programming of up to five-axis mill work and up to four-axis wire EDM work, operating on a PC and downloading to the JAPT 3J control on the Japax wire EDM, SPC-II control on the BostoMatic machining system, as well as some of the other prismatic machining equipment. Emphasizes the creation of error free part programs using the ACU.CARV programming language, including part geometry, tool path, and debugging with secondary emphasis on the downloading of a program to the mill, machining center/system, or wire EDM. Credit may be earned in SKCN 270 or CNC 270 but not both. (57-3,40 OJT)
- SKCN 280 ACU.CARV Ads Off-Line Programming System** 4 Sem Hrs  
Prerequisite: CNC 270 or SKCN 270, or previous programming experience with AutoCAD and ACU.CARV softwares. Emphasizes the use of AutoCAD and ACU.CARV ADS softwares to create surfaces and tool paths for programming of up to five-axis mill work and up to four-axis wire EDM work. Includes the downloading of error-free PC created programs to JAPT 3J control on the Japax wire EDM, SPC-II control on the BostoMatic machining system, as well as some other prismatic machining equipment. Credit may be earned in CNC 280 or SKCN 280 but not in both. (57-3,40 OJT)
- SKCT 101 Industrial Millwright Procedures** 3 Sem Hrs  
Prerequisite: SKDR 101. A course for millwrights emphasizing blueprint reading, layout of typical industrial construction, equipment, and safety and guarding. Topics covered include plan and elevation prints of building footings and foundation, mechanical services, equipment and machinery foundations, ventilation systems, catwalks, decking, platforms, and various conveying systems. (45)
- SKCT 102 Building Materials** 3 Sem Hrs  
To learn development, properties, and composition of various building materials. To develop perception for economical and appropriate application of building materials. To learn various sources of technical data about residential and industrial building materials. To develop skills of building material application. (45)
- SKCT 105 Building Site Surveying** 3 Sem Hrs  
Studies fundamentals of site analysis, including utility services, metes and bounds, solar access and restrictions. Teaches elements of surveying including use of instruments, leveling, measurement of angles and distances, contours, location of site elements and development of a site plan from field data. Interprets engineering surveys, introduces landscape design, and studies computer aided design examples. Credit may be earned in RC 105, ARC 221, or SKCT 105, but not in all three. (45)
- SKCT 106 Concrete and Foundations** 3 Sem Hrs  
Prerequisite: SKCT 102. Studies practical methods and procedures of preparing and setting concrete forms for such areas as basement floors, garage floors, driveways, sidewalks, patios, etc. (60)
- SKCT 111 Construction Print Interpretation** 3 Sem Hrs  
Instruction in this course includes trade terminology and description of the various views of working drawings, pictorial drawings, and the basic procedures in development of these drawings. Also included is the interpretation of specifications and job information as they pertain to construction and layout. Credit may be earned in either SKCT 111 or RC 101 but not both. (45)
- SKCT 114 Framing Square** 4 Sem Hrs  
Uses the framing square and speed square in construction. Credit may be earned in either SKCT 114 or RC 114 but not both. (60)
- SKCT 201 Rough Framing and Outside Framing** 4 Sem Hrs  
Prerequisite: SKCT 114. Instruction in the techniques of construction used in all phases of framing and exterior finishing. (90)
- SKCT 204 Inside Finishing and Hardware** 4 Sem Hrs  
Prerequisite: SKCT 114. Includes principles of interior construction, journey and installation, and finishing of all types of interior trim. Credit may be earned in either SKCT 204 or RC 204 but not in both. (90)
- SKCT 205 Cabinet Making and Millwork** 5 Sem Hrs  
Prerequisite: SKCT 204. A study is made of the construction of, the placement of, and installation procedures of cabinets used in residential and commercial building. (105)
- SKDR 101 Sketching and Blueprint Reading** 4 Sem Hrs  
Topics include: The graphic language and design, lettering, sketching, and shape descriptions, multiview projections, sectional views, auxiliary views, shop processes, thread fasteners and springs, and print reading of typical shop blueprints. (60)
- SKDR 111 Drawing II** 3 Sem Hrs  
Prerequisite: SKDR 101. A continuation of SKDR 101. Topics include multiview and pictorial sketching and drawing, sections drawing, dimensioning and tolerancing. (45)
- SKDR 121 Descriptive Geometry** 3 Sem Hrs  
Prerequisite: SKDR 111. Topics include orthographic projections, primary auxiliary views and lines, planes, successive auxiliary views, piercing points, intersection of planes, and angle between planes. (45)
- SKDR 128 Geometric Tolerancing** 2 Sem Hrs  
Prerequisite: SKDR 111 or permission of department. Primary emphasis is on geometric symbols used in place of written notes on industrial drawings including datums, symbols, and other items tolerancing to the geometry of the part. Credit may be earned in either SKDR 128 or DRF 128 but not both. (30)



**SKDR 130 Tool and Die Design** 4 Sem Hrs  
Prerequisite: SKDR 111. Topics include: design of jigs and fixtures, design of gaging mechanisms, design of automatic tooling, machining cost calculations. The student will use this data to make class presentations with questions and answer sessions. (60)

**SKDR 131 Pattern Design I** 3 Sem Hrs  
Prerequisite: SKDR 111. Course covers terms and definitions of pattern design. Students will learn how to make calculations from tables and drawing, estimate weights from pattern charts and materials codes, and sketch and detail typical pattern designs. (45)

**SKDR 141 Pipe and Tube Isometrics** 3 Sem Hrs  
Sketching course for industrial pipefitters includes all mensurations for layout and construction. (45)

**SKEL 101 Basic Electronics** 6 Sem Hrs  
Prerequisite: SKMA 113. The first course in a series to train electrician apprentices in the theory and application of electronics to industrial control systems. Basic electronic devices will be discussed, along with how they work and their electrical characteristics. Simple electronic circuits will be set up on trainers to illustrate the application of the devices. Troubleshooting techniques and basic test instruments will be discussed and used. (90)

**SKEL 102 Industrial Electronics** 4 Sem Hrs  
Prerequisite: SKEL 101. The second course in a series to train electrician apprentices in the theory and application of electronics to industrial control systems. Application of basic electronic devices to industrial control systems will be discussed. Major topics will be digital solid state logic and power control using SCR's and TRIAC's. Troubleshooting techniques and basic test instruments will be discussed and used. (60)

**SKEL 111 Conventional Controls** 3 Sem Hrs  
Prerequisite: SKMA 111. Develops competencies in reading basic electrical blueprints and troubleshooting through familiarization of basic control devices. Develops visual and analytical relationships between the device and the corresponding blueprint configurations and symbols. Discusses and applies basic troubleshooting skills using the electropneumatic laboratory simulation training board. (45)

**SKEL 121 Advanced Controls I** 4 Sem Hrs  
Prerequisite: SKEL 102. Topics include: vacuum and vapor tubes, resistance welding controls, induction heating, motors, invertors, polyphase rectifiers, op-amps transducers, instrumentation, closed loop controls, servo systems, temperature controls, troubleshooting. (75)

**SKEL 122 Advanced Controls II** 4 Sem Hrs  
Prerequisite: SKEL 121. Present students with basic concepts and hands-on experience with programmable digital control systems. Emphasis placed on hardware, program (software) entry, R-T-C math, documentation, trouble-shooting, communication links (generic) and peripheral equipment. (60)

**SKEL 131 AC/DC Machinery** 3 Sem Hrs  
Prerequisite: SKMA 113. This course is one in a series of courses on conventional industrial controls. Topics include physics of electromotive forces, armature reaction, induction, DC generator types, AC generators, DC motors, DC motor starters, transformers, AC motors and variable speed drive systems. (45)

**SKEL 141 Electrical Shop** 3 Sem Hrs  
Prerequisite: SKEL 111 and SKEL 131. Develops competency in the application of the National Electrical code (NEC) and its relationship to industry and some residential wiring as written by the National Fire Protection Association (NFPA). Includes the Joint Industrial Council (JIC) standards for industrial electrical mass production operations and equipment. Emphasizes safety regarding hazardous locations, electrical grounding, ground faults, fusing, motor circuit protection and controls as well as electro-mechanical and hydraulic devices. (45)

**SKET 106 Electricity I Applied** 3 Sem Hrs  
Teaches students beginning electricity. Uses non-mathematical treatment of basic AC (alternating current) circuits. Includes introductory schematic symbols and circuits, Ohm's Law and Power formulas, series parallel and simple combinations circuits (not using Kirchoff, Thevenin, or Norton loop analysis), magnetism, electromagnetism, lighting and timing circuits. Includes hands-on circuit construction. Credit may be earned in RHA 140 or SKET 106 but not both. (45)

**SKET 107 Electricity II Applied** 2 Sem Hrs  
Prerequisite: SKEL 106. Designed to further the study of electrical applications. Students should have prior understanding of basic electrical terms, as well as some ability to solve problems in a series of parallel circuits. The course will provide an in-depth study of frequency, inductance, capacitance, three-phase power, peak-effective-average voltage, circuits that contain resistors, coils, and capacitors, lost power and power factor correction, and impedance. A review and pre-test will be given the first night of class. (30)

**SKGM 131 Automotive Electronics** 4 Sem Hrs  
Introduces the operation, maintenance, and service of battery, charging, starting systems and GM electrical and electronic systems. Credit may be earned in SKGM 131 or AGM 131, but not in both. (100)

**SKGM 132 Brakes, ABS & TCS Service** 5 Sem Hrs  
Introduces the operation, maintenance, and service of GM base brakes, anti-lock and traction control. Presents general auto lab equipment operation and stresses safety. Credit may be earned in SKGM 132 or AGM 132, but not in both. (125)

**SKGM 133 Steering and Suspension Service** 6 Sem Hrs  
Introduces the operation, maintenance, and service of GM steering and suspension systems. Credit may be earned in SKGM 133 or AGM 133, but not in both. (150)

**SKGM 141 Specialized Engine Repair** 6 Sem Hrs  
Prerequisite: AGM 134. Introduces the operation, maintenance, and service of GM engines for mechanical performance. Stresses proper repair techniques and diagnosis of engine noises. Credit may be earned in SKGM 141 or AGM 141, but not in both. (150)

**SKGM 142 Electronic Engine and Emission Controls Service** 9 Sem Hrs  
Prerequisite: AGM 134. Introduces the operation, maintenance, and service of GM engines for drivability performance. Stresses proper repair techniques and diagnosis of engine drivability problems. Credit may be earned in SKGM 142 or AGM 142, but not in both. (225)

**SKGM 185 Applied Auto Electronics** 3 Sem Hrs  
Prerequisite: SKGM 183 or AGM 183. Studies electrical and magnetic circuits as it pertains to electrical storage batteries, cranking and charging systems with emphasis on proper diagnosis and testing of components, power and ground circuits. Credit may be earned in SKGM 185 or AGM 185 but not both. (30-30) W

**SKGM 231 Driveline and Manual Trans Service** 3 Sem Hrs  
Prerequisite: AGM 143. Introduces the operation, maintenance, and service of GM manual transmissions, transfer cases, propshafts and final drive units. Credit may be earned in SKGM 231 or AGM 231 but not in both. (75)

**SKGM 232 Automatic Electronic Transmissions Service** 8 Sem Hrs  
Prerequisite: AGM 143. Introduces the operation, maintenance, and service of GM electronically controlled transmissions. Credit may be earned in SKGM 232 or AGM 232 but not in both. (200)

**SKGM 233 HVAC Service** 4 Sem Hrs  
Prerequisite: AGM 143. Introduces the operation, maintenance, and service of GM Heating, Ventilation, and Air Conditioning systems and their controls. Credit may be earned in SKGM 233 or AGM 233 but not in both. (100)

**SKGM 241 Body Electronics Service** 4 Sem Hrs  
Prerequisite: AGM 234. Stresses the operation, diagnosis and service of GM body electrical and electronics systems. Credit may be earned in SKGM 234 or AGM 234 but not in both. (80)



**SKMA 101 Apprentice Mathematics I 2 Sem Hrs**  
Review of basic mathematics principles. Topics include: whole numbers, fractions, decimals, percents, metric system, operations of polynomials, rational numbers, polynomials, equations, exponents, and radicals. (30)

**SKMA 102 Mathematics II 4 Sem Hrs**  
Prerequisite: SKMA 101. Introduction to algebra. Topics include: linear equations with applications, exponents and radicals, quadratic equations, ratio, proportion, and variation. (60)

**SKMA 103 Mathematics III 4 Sem Hrs**  
Prerequisite: SKMA 102. Introduction to geometry and trigonometry. Topics include area and volume formulas with practical applications of screw, screw threads, belts, pulleys, gear wheels, and use of electronic calculator. (60)

**SKMA 111 Applied Integrated Electrical Math I 6 Sem Hrs**  
Prerequisite: High School Algebra or Equivalent. Develops competency in the application of mathematics principles to electrical circuit configurations. Includes mathematical equations and formulas necessary to solve D.C. circuit applications applied to electrical, mechanical and process industrial control equipment. Covers non-mathematical theory related to electricity and electronics. (90)

**SKMA 112 Applied Integrated Electrical Mathematics II 3 Sem Hrs**  
Prerequisite: SKMA 111. Develops further competency in the application of mathematics principles to electrical circuit configurations including DC and AC circuit applications. Includes trigonometry as applied to electrical-circuit theory and non-mathematical theory related to electricity and electronics. (45)

**SKMA 113 Applied Integrated Electrical Math III 3 Sem Hrs**  
Prerequisite: SKMA 112. This course is the third in a series of electrical mathematics and circuit analysis intended to give an electrical apprentice the necessary background to maintain and service industrial control equipment. It will include a study of capacitance, capacitive reactance, vectors, phasers. Series AC circuits, power factor and three-phase systems. Trigonometry and pythagorean mathematics will be used in the computation of the phase relationships of the various quantities studied. (45)

**SKMT 101 Hydraulics and Pneumatics I 3 Sem Hrs**  
Beginning course in oil and air fluid power systems commonly found in industry. Specifically the study of the physical description, function and application of components. Topics include pumps, compressors, actuators, valves, conditioners, instruments, air/oil components, fluid properties, and their representative graphic symbols. (45)

**SKMT 102 Hydraulics and Pneumatics II 3 Sem Hrs**  
Prerequisite: SKMT 101. Advanced course in fluid power designed for machine repair, pipefitters and plumber trades. Analysis of common hydraulic and pneumatic components and circuits. Includes building of machine tool circuits and troubleshooting. Special systems such as hydrostatic transmissions and electrohydraulic servos, and ladder diagramming of pneumatic control circuits. Mathematics and graphic symbols used in troubleshooting. (45)

**SKMT 111 Metals 3 Sem Hrs**  
Topics covered are temperature measurement by color, hardness, strengths, fatigue properties, steels, plastics, cast iron, copper, brass, bronze, aluminum, their applications with respect to wear, corrosion, and design. Credit may be earned in SKMT 111 or WELD 111 but not both. (45)

**SKMT 112 Ferrous Heat Treatment 2 Sem Hrs**  
Designed to acquaint students with various forms of heat treatment applied to plain carbon steels, cast iron, alloy tool steel, and stainless steel. Course will also include steel classification and machinability. (30)

**SKMT 151 Power Transmission 3 Sem Hrs**  
Fundamentals of power transmission including bearings, chain drives, clutches and brakes, conveyor components, shaft couplings, flat belt drives, open gear drives, enclosed gear drives, electric motors, toothed belt drives, V-belt drives, variable speed drives, and specialties. (45)

**SKMT 161 Industrial Rigging and Safety 2 Sem Hrs**  
This course is a study of the methods of safe transfer of loads. It provides comprehensive, easy-to-understand, and reliable information of the entire field of rigging operations. It also discusses techniques and methods to accomplish the rigger's task with the greatest safety for all of the workers on a project, as well as for passers-by and the public in general. "Safety is no accident" is stressed. (30)

**SKMT 171 Sheetmetal I 2 Sem Hrs**  
Develops geometrical structures; intersections by radial and triangulation methods of sheetmetal layout, the drawing of development layouts and the forming of actual models with sheetmetal. Credit may be earned in SKMT 171 or RHA 142, but not both. (60)

**SKMT 172 Sheetmetal II 3 Sem Hrs**  
Prerequisite: SKMT 171. Continuation of Sheetmetal I. Projects involve fabrication of complex pieces to actual specification using tools common to the trade. (45)

**SKMT 173 Sheetmetal III 3 Sem Hrs**  
Prerequisite: SKMT 172. Continuation of Sheetmetal Layout II. Emphasis placed on the layout and construction of patterns found in the industrial plant. Special projects will be assigned. (45)

**SKMT 231 Fundamentals of Foundry Technology 3 Sem Hrs**  
Prerequisite: Foundry experience or permission of department. Provides an overview of all the components that make up a modern foundry. Participants will become familiar with the interrelationship between the metallurgy, melting, production engineering, core, molding, finishing, and reliability and quality control departments. Special emphasis is placed on how each department is dependent upon the other and what affect each has on the production of a quality product at a competitive cost, through the use of a statistical process control. (45)

**SKOT 191 Machine Controls I 3 Sem Hrs**  
Presents students with mechanical background the essentials of wiring and troubleshooting controls in production machinery. Studies AC/DC circuits, fundamentals of hydraulics and pneumatics as they pertain to machine control circuitry. Emphasizes relay ladder diagrams, simple debugging and nomenclature necessary to communicate with design engineers and other trades in the installation and troubleshooting of panel wiring. (45)

**SKOT 192 Machine Controls II 3 Sem Hrs**  
Prerequisite: SKOT 191. Machine Controls II is a continuation of Controls I with special emphasis placed on diagnostic troubleshooting techniques. Primary objective of the course is to enable maintenance personnel to discuss machine functions or malfunctions with machine and control system designers. The course will also benefit toolmakers and machine builders to understand the overall operation of complex machinery they build and/or assemble. (45)

**SKPH 101 Applied Physics 4 Sem Hrs**  
Prerequisite: SKMA 103. Metric measurement, means of physical description, review of applied plane and solid geometry, matter, mechanical properties of solids, fluids, review of trigonometry as related to force and acceleration, static equilibrium energy and power related to ability to do work, friction and its effects, simple machines, hydraulic and pneumatic principles, fluids in motion, water and airwaves, temperature, heat transfer, electricity, magnetism and alternating currents. (60)

**SKPT 101 Industrial Piping 4 Sem Hrs**  
Basic sanitation principles, terminology, materials classification, drainage systems, waste disposal system, pipe sizing and layout. Industrial piping situations involving gasoline, acid plating solutions, gases, safety, code requirements. (60)

**SKPT 106 Pipefitters Handbook 3 Sem Hrs**  
Prerequisite: SKMA 103. Review of mathematical calculations including geometry and trigonometry. Includes: pipe bends, linear expansion of piping, tank capacities, leverage, methods of layout angles, pipe-fitting calculations, pipe-welding layout, and reference tables. Credit may be earned in SKPT 106 or WELD 112 but not both. (45)



**SKPT 111 Stationary Boiler Engineering I** 2 Sem Hrs  
Orientation to power plant operations including boiler safety rules and regulations. General operating procedures for various types of boilers, uses and types of fuels and their sources; elementary chemistry of combustion. Credit may be earned in either SKPT 111 or CVI 1037 but not both. (30)

**SKPT 112 Stationary Boiler Engineering II** 2 Sem Hrs  
Prerequisite: SKPT 111 or permission of department. This course includes boiler settings, combustion equipment, operation and maintenance of boilers, pumps, reciprocating steam engines, valve operating mechanisms. Credit may be earned in SKPT 112 or CVI 1038 but not in both. (30)

**SKPT 113 Stationary Boiler Engineering III** 2 Sem Hrs  
Prerequisite: SKPT 112 or permission of department. Automatic boiler operation. Forced and induced draft systems. Steam turbines and auxiliaries, auxiliary steamplant equipment, cooling towers, boiler feed water treatment and heating. Credit may be earned in SKPT 113 or CVI 1039 but not in both. (30)

**SKPT 114 Stationary Boiler Engineering IV** 3 Sem Hrs  
Prerequisite: SKPT 113 or permission of department. This course includes air compressors of the following types: centrifugal, rotary screw, large reciprocating compressors and drives; boiler feed water chemical treatment. Credit may be earned in either SKPT 114 or CVI 1040 but not both. (30)

**SKPT 121 Refrigeration and Air Conditioning** 3 Sem Hrs  
Principles of air conditioning and heating. Content includes the basic refrigeration cycle, comfort cooling systems, trouble shooting, installation, selection of equipment, heating systems, control units, and humidifiers. Credit may be earned in either SKPT 121 or CVR 1001 but not both. (45)

**SKPT 122 Refrigeration and A/C Service I** 3 Sem Hrs  
Prerequisite: SKPT 121. Covers common types of domestic refrigerators, dehumidifiers and portable air-conditioners with particular attention to principles of construction and operation of complete refrigeration systems. Through classroom demonstrations and lab experiments, students understand theory and principles underlying repairing and practical shop work. Credit may be earned in either SKPT 122 or RHA 122, but not both. (45)

**SKPT 123 Commercial Refrigeration I** 3 Sem Hrs  
Prerequisite: SKPT 122. Information and hands-on tasks needed to properly install components and troubleshoot light commercial units. Credit may be earned in either SKPT 123 or CVR 1003 but not both. (45)

**SKPT 124 Domestic Refrigeration II: Household Units** 3 Sem Hrs  
Prerequisite: SKPT 122 and SKMA 111. Troubleshooting domestic refrigeration systems. Primary focus will be on the electrical components and system parts in frost-free, conventional and cyclematic units. Credit may be earned in either SKPT 124 or CVR 1004 but not both. (45)

**SKPT 125 Commercial Refrigeration II** 3 Sem Hrs  
Prerequisite: SKPT 123 and SKMA 111. Proper wiring of electrical controls and components in circuits and troubleshooting electrical problems. Credit may be earned in either SKPT 125 or CVR 1005 but not both. (45)

**SKPT 126 Air Movement and Duct Design** 3 Sem Hrs  
Prerequisite: SKMT 123 or permission of department. A study of air handling for air conditioning, heating, and ventilation, including air duct design and psychometric problems of design and installation. (45)

**SKTR 181 Machine Tool I** 2 Sem Hrs  
Introduction to the industrial machine shop. Topics include: Safety, materials, hand tools, precision instruments, and purpose and operation of machine tools. (30)

**SKTR 182 Machine Tool Lab II** 3 Sem Hrs  
Prerequisite: SKTR 181 or permission of department. Purpose of course is to expose apprentice to a variety of special machine shop operations/procedures not normally available in early stages of the apprentice's on-the-job training. (45)

**SKTR 183 Machinery Handbook** 3 Sem Hrs  
Prerequisite: SKTR 182 and SKMA 103. This course is devoted to learning how to use and understand the Machinery Handbook. (45)

**SKWL 101 Fuel Gas Welding and Cutting** 3 Sem Hrs  
Topics include safety in use of equipment for oxy-fuel gas welding and cutting, and equipment set-up. Laboratory experience includes oxy-fuel welding of flat strips 1/8" or less in thickness, and cutting, beveling, and piercing plate and pipe. Credit may be earned in either SKWL 101 or WELD 103 but not both. (45)

**SKWL 104 Introduction to Shielded Metal ARC Welding** 3 Sem Hrs  
Topics include safety indoctrination, safety in arc welding, welding terms and definitions, electrode selection, and welding joints. Laboratory includes striking an arc, running beads, pad welding, and fillet welds. Credit may be earned in either SKWL 104 or WELD 104 but not both. (45)

## WELDING ENGINEERING COURSES

**WELD 101 Fuel Gas Welding, Cutting, Brazing** 1 Sem Hr  
Addresses safety in the use of oxy-fuel equipment, procedures, and operations. Includes the proper applications of common techniques for the joining and severing of metals. (5-15)

**WELD 103 Fuel Gas Welding and Cutting** 3 Sem Hrs  
Topics include safety in use of equipment for oxy-fuel gas welding and cutting, and equipment set-up. Laboratory experience includes oxy-fuel welding of flat strips 1/8" or less in thickness, and cutting, beveling, and piercing plate and pipe. Credit may be earned in either WELD 103 or SKWL 101 but not both. (45-0)

**WELD 104 Introduction to Shielded Metal ARC Welding** 3 Sem Hrs  
Topics include safety indoctrination, safety in arc welding, welding terms and definitions, electrode selection, and welding joints. Laboratory includes striking an arc, running beads, pad welding, and fillet welds. Credit may be earned in either WELD 104 or SKWL 104 but not both. (45-0)

**WELD 105 Mig Welding of Thin Gauge Steel** 1 Sem Hr  
Addresses proper set-up of the Mig equipment and proper adjustment of the welding parameters. Includes the proper application of common techniques for the joining of thin gauge steel. (5-15)

**WELD 111 Welding Metallurgy** 3 Sem Hrs  
Covers temperature measurement by color, hardness, strengths, fatigue properties, steels, plastics, cast iron, copper, brass, bronze, aluminum, their applications with respect to wear, corrosion, and design. Credit may be earned in WELD 111 or SKMT 111 but not both. (45-0)

**WELD 114 Shielded Metal ARC Structural and Tank** 8 Sem Hrs  
Prerequisite: WELD 104 or SKWL 104 with a "C" (2.0) average or better or permission of instructor. Teaches Shielded Metal ARC Welding (SMAW) safety, welding terms and definitions, welding electronics, and welding joints. Included in laboratory exercises are groove welds on plate in fixed positions. (30-90)

**WELD 120 Beginning Industrial Blueprint Reading** 2 Sem Hrs  
Course designed for machine operators, welders, or assemblers with little or no blueprint reading experience. Includes manipulation of basic fractions and decimals and as applied to the reading of blueprints, reading measuring instruments, basic geometric figures, drafting and blueprinting procedures, basic orthographic projection auxiliary and sectional views, detail and assembly drawings, dimensioning and tolerances, title block, change block, list of materials, and notes. Credit may be earned in WELD 120 or DRF 120 but not in both. (30-0)

**WELD 122 Blueprint Reading for Welders and Fabricators** 2 Sem Hrs  
Prerequisite: WELD 120 or DRF 120. Designed specifically for welders and fabricators working with welding drawings. A more in-depth treatment of basic blueprint information, orthographic projection, assembly drawings, and geometric tolerancing. Emphasis placed on welding symbols and welding drawings. Credit may be earned in WELD 122 or DRF 122 but not both. (30-0)



**WELD 220 Weld Qualification-Plate 4 Sem Hrs**  
Prerequisites: WELD 114 and WELD 235 with a "C" (2.0) in each class or better or permission of instructor. Teaches welding safety, welding terms and definitions, welding electronics, and AWS welder performance testing procedures. Includes laboratory exercises e.g. in qualification tests groove welds on plate in fixed positions. (15-45)

**WELD 224 Shielded Metal ARC Welding Pipe 8 Sem Hrs**  
Prerequisite: WELD 114 with a "C" (2.0) average or better or permission of instructor. Teaches Shielded Metal ARC Welding (SMAW) safety, nominal pipe size and thickness standards, and welding joints. Included in laboratory exercises are groove welds on pipe in fixed positions. (30-90)

**WELD 226 Gas Tungsten ARC Welding 6 Sem Hrs**  
Discusses general safety, Gas Tungsten ARC Welding (GTAW) safety, welding terms and definitions, filler metal, electrode and gas selection, nominal pipe size and thickness standards, and welding joints. Included in laboratory exercises are starting an arc, running beads, pad welding, and groove welds on plate and pipe in fixed positions. (30-60)

**WELD 235 Gas Metal ARC Welding 6 Sem Hrs**  
Discusses general safety, Gas Metal ARC Welding (GMAW) safety, welding terms and definitions, electrode and gas selection, nominal pipe size and thickness standards, and welding joints. Includes laboratory exercises in starting an arc, running beads, pad welding, and groove welds on plate and pipe in fixed positions. (30-60)

**WELD 290-299 Special Projects in Welding**

## WATER ENVIRONMENT TECHNOLOGY COURSES

**WET 110 Water Treatment Technologies 3 Sem Hrs**  
Studies conventional water treatment processes. Includes preliminary treatment, coagulation and flocculation, sedimentation and clarification, filtration, and disinfection. Includes tours of municipal water treatment facilities and related field discussions. Credit may be earned in WWT 110 or WET 110, but not in both. (45-0)

**WET 112 Wastewater Treatment Technologies 3 Sem Hrs**  
Provides an introduction to the causes of water pollution, the reasons for treating polluted waters and the fundamentals of wastewater treatment. Studies the basic principles of treatment plant operation and the processes commonly used in pollution control facilities. Investigates terms, mathematics and problem solving techniques commonly used by wastewater treatment personnel. Credit may be earned in WWT 112 or WET 112, but not in both. (45-0)

**WET 210 Advanced Wastewater Treatment Technologies 4 Sem Hrs**  
Prerequisites: WET 112 and CHM 105 or CHM 111 and MTH 111 or MTH 119 or permission from instructor. Studies wastewater treatment technologies beyond conventional processes. Studies the processes and techniques commonly used for advanced wastewater treatment, disinfection, solids stabilization and disposal, nutrient reduction and toxic removal. Develops skills in proper lab techniques, representative sampling procedures, record-keeping, data preparation, and report writing. (45-30)

**WET 212 Advanced Water Treatment Technologies 4 Sem Hrs**  
Prerequisites: WET 110, CHM 105 or CHM 111 and MTH 111 or MTH 119 or permission of instructor. Studies water treatment technologies beyond conventional processes. Includes lime/soda ash softening, ion exchange granules and powder-activated carbon adsorption, aeration, air stripping, and membrane processes. Includes field tours and discussions on lab safety and health, proper lab technique, representative sampling procedures, record keeping, data preparation and report writing and familiarization with the analytical procedures used to determine and measure water quality. Credit may be earned in WWT 212 or WET 212, but not in both. (45-30)

**WET 220 Water Quality Analysis and Microbiology 4 Sem Hrs**  
Prerequisites: WET 210 and WET 212 or permission from instructor. Studies the various water quality analytical techniques and the microbiology of water, including microscopic examination and identification of microorganism commonly found in water supplies, water and wastewater treatment processes and polluted bodies of water healthy water supplies, water and wastewater treatment facilities, and polluted bodies of water. Concentrates on lab safety and health, proper lab technique, representative sampling procedures, record-keeping and data preparation and report writing. Discusses organic contamination; introduces the procedures and equipment typically used in Water/Wastewater analytical procedures. Familiarizes students with organisms commonly found in water and wastewater samples and with specific bacteriological analysis techniques. (45-30)

**WET 230 Water/Wastewater Utility Management 3 Sem Hrs**  
Prerequisites: WET 110 and WET 112 or permission of instructor. Studies, in depth, the management elements of planning, organizing, staffing, directing and controlling as they relate to the management, supervision and administration of Water and Wastewater facilities. Presents management styles, problem recognition and problem solving techniques, budget and report preparation activities, federal and state regulatory issues, employee/ employer (labor/management) relations and leadership topics. Credit may be earned in WWT 230 or WET 230, but not in both. (45-15)

**WET 240 Applied Hydraulics 3 Sem Hrs**  
Prerequisite: MTH 111, MTH 119 or permission of instructor. Studies applied hydraulic principles utilized in water distribution and wastewater collection systems. Includes pumpage, headloss, piping, valving, metering, cross connection control, storage, corrosion, and an introduction to hydraulic modeling. Discusses the principles of force, pressure, hydraulic grade line, and pump curves. Includes tours of municipal/industrial water pump stations and storage reservoirs and related field discussions. Credit may be earned in WWT 240 or WET 240, but not in both. (45-0)

**WET 244 Water/Wastewater Utility Equipment Maintenance 3 Sem Hrs**  
Prerequisite: WET 110 and WET 112. Provides the student with basic knowledge of mechanical equipment and repair techniques used in both water and wastewater facilities. Uses shop drawings and blueprints during disassembly and reassembly of a variety of mechanical devices. Studies pumps, valves, piping systems, and chlorination equipment. Credit may be earned in WWT 244 or WET 244, but not in both. (45-0)

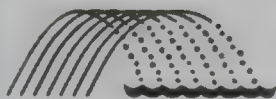
**WET 246 Water/Wastewater Utility Electrical Maintenance 2 Sem Hrs**  
Prerequisite: WET 110 and WET 112. Studies basic electricity and instrumentation utilized in water and wastewater treatment facilities. Emphasizes the use of testing equipment to troubleshoot electrical and instrumental failures, maintenance problems, and evaluation of equipment performance. Includes discussion of energy conservation methods. Credit may be earned in WWT 246 or WET 246, but not in both. (30-0)

**WET 265 Practicum in Water/Wastewater Treatment 4 Sem Hrs**  
Prerequisites: Must be taken during final semester with permission of program director. Provides opportunities to perform technical procedures through structured field experience in water and wastewater treatment plants. Emphasizes gaining experience under plant managers and operating personnel with goal of developing organizational skills and responsibility necessary for entry-level employment. Uses rotation through assigned areas of experience in water treatment for 160 hours and continuous experience in wastewater treatment for 160 hours of in-plant services for total of 320 hours minimum required. Credit may be earned in WWT 265 or WET 265, but not in both. (3-320 OJT)

**WET 290 -299 Special Projects in Water Environment Technology**







# REGULATIONS AND REFERENCES

- ◆ Students' Rights, Responsibilities, and Conduct
- ◆ Records Access and Confidentiality
- ◆ The Delta Directory
  - Board of Trustees, Administrative Officers, Foundation Directors, Full-Time Faculty and Administrative/Professional Staff
- ◆ Definitions of College Terms
- ◆ Index
- ◆ Maps
- ◆ Services, Opportunities and Contacts



# Students' Rights, Responsibilities, and Conduct

In joining the academic community, students enjoy the right of freedom to learn and share the responsibility in exercising that freedom. Students are expected to conduct themselves in accordance with standards which are designed to perpetuate the educational purposes of the College.

The College has developed procedures and channels by which students may have a fair and objective hearing for their grievances in regard to academic evaluation, students' rights and privacy, and disciplinary action. Students have the right of protection against prejudice, capricious academic evaluation, or loss of personal rights and freedom. At the same time, however, students are responsible for maintaining standards of academic performance established for each course in which they are enrolled and for following the rules of conduct established by the College.

## Association and Expression

A. Students are free to organize and join associations to promote their common interests. In order to use College facilities and resources and to request financial assistance, student groups are required to register with the Student Activities Office, submitting a statement of purpose and a current list of officers or designated representatives. Groups are also encouraged to choose a faculty or staff advisor to assist them.

B. Students and student organizations are free to examine and discuss all questions of interest to them and to express opinions publicly and privately, including their views on issues of College policy.

C. Generally, students or student organizations may distribute written material without prior approval. Hand-to-hand distribution shall be permitted in areas of public passage (commons, hallways, sidewalks, etc.), providing distribution does not interfere with normal College activity or routine. Posting and other types of distribution shall be limited to those places established by written College regulations.

D. Students and student organizations are free to invite speakers, to hear any person, and to plan programs of their own choosing subject only to those written requirements established by the College to ensure proper scheduling and use of facilities.

E. No policy, procedure, or guideline of Delta College shall discriminate on the basis of the political, social, or other opinions of students individually or collectively.

F. No record will be kept by Delta College which reflects the lawful political activities or beliefs of students, unless requested by the student in writing. Information about a student's views, beliefs, and/or political associations acquired by the faculty or other College employees in the normal course of their work will be considered confidential and will not be disclosed without the knowledge and consent of the student unless under legal compulsion.

G. Nothing in this policy shall be construed to imply approval or endorsement by Delta College of the views expressed by students or student organizations.

H. Nothing in this policy shall be construed to relieve any person of obligations under Regulations and Rules of Conduct.

## Regulations and Rules of Conduct

### I. Introduction

A. **General Responsibility:** Delta College has the responsibility to adopt and enforce rules which are consistent with Delta College goals and operations and to establish due process procedures in disciplinary cases.

B. **Authority to Establish Standards of Conduct:** Standards of conduct are established by rules of the College, as adopted by the Board of Trustees, and made known through College publications or by notices distributed or prominently posted on College Bulletin Boards; and by laws of the United States, State of Michigan and County of Bay (public laws).

Except in the case of interim or emergency rules as granted by Michigan Public Act No. 26 of 1970, such regulations shall be established and amended with the advice of the College Senate. Final authority is through either the Delta College Board of Trustees or the laws of the United States, State of Michigan, or County of Bay.

C. **Individual Responsibility:** An individual having an institutional relationship to Delta College (members of College community) is automatically placed under the rules of the College. "Institutional relationship to the College" means any connection of employment, enrollment, or service existing between any person and Delta College. As used herein, this phraseology is intended to prevent the application of these rules to purely personal or social relationships between or among students, faculty members, administration, or staff members outside the College proper. It is therefore important for all members of the College community to familiarize themselves with the rules and regulations affecting them.

D. **Effect of Violating Rules:** A member of the College community violating any of the rules of the College or a public law, on-Campus or off-Campus, at a Delta College-sponsored activity, is subject to disciplinary action by Delta College that is appropriate to the nature of the offense. Such disciplinary action will be taken in accordance with the procedures governing cases of violations as outlined in the Delta College judicial process.

E. **Reports of Violations:** Reporting of violations shall be within the province of all members of the College community, because they have a common responsibility in maintaining an orderly and efficient community for their mutual benefit. Violations may fall in one of several categories: 1. Minor offenses which are dealt with by reprimand; 2. Violations by students which are to be reported to the Office of the Vice President of Student Services; 3. Violations by faculty or staff members which are to be reported to the Office of the President; and 4. Civil or criminal violations which are to be reported to the Campus Police Department.

F. **Severance Provision:** If any of the foregoing rules or any part of any such rule shall be adjudged invalid by a court of competent jurisdiction, then such adjudication shall not affect the validity of these rules as a whole or any provision or part of any such rules not so adjudged invalid.

### II. Rules and Regulations

A. **Physical Force:** No member of the College community shall use physical force, threaten physical force, or use intimidation against any person engaged in an activity properly undertaken as part of an institutional relationship of the College except as permitted under normal law enforcement procedures.

B. **Disruption:** No member of the College community shall interfere with a College function by depriving any person of needed safety, quiet, or other physical conditions of work or study.

C. **Interference:** No member of the College community shall interfere with the free movement of any person engaged in an activity properly undertaken as part of an institutional relationship to the College.



**D. Compliance:** In keeping with the system of voluntary compliance that underlies the College Regulations and Rules of Conduct, no member of the College community shall fail to follow the reasonable instructions given by an appropriate College official to cease specified conduct, if such conduct threatens disruption or interference with the rights of others, College discipline, College functions, and/or order in the College community.

**E. Identification:** No member of the College community shall refuse to provide identification when requested to do so by an identified employee of the College.

**F. Forbidden Occupation:** No member of the College community shall, subsequent to reasonable notice to leave given by the College President or the authorized designee, continue occupation of any College facility or property which is under the direct control or responsibility of the College, especially if such occupation interferes with a College function or risks injury to a person or property.

**G. Facility Entry and Usage:** No member of the College community shall gain or attempt to gain unauthorized entry to or make unauthorized use of the College facilities or property.

**H. Property:** No member of the College community shall damage, deface, destroy, steal, or misappropriate the property of the College, any member of the College community, or any visitor to the College Campus.

**I. Unauthorized use of College Credit, Property, Etc.:** No unauthorized member of the College community shall use the College telephones, postal machines and meters, duplicating machines, computer, motor vehicles, or other equipment where the unauthorized use of such results in the incurring of charges by the College. This provision shall be deemed to also include College billing, charging, and credit card numbers utilized for communications or transportation purposes. Further it shall be a violation for any member of the College community who has not been issued a key by the College to possess or use College keys for any purpose whatsoever.

**J. Counterfeiting, Altering, and Copying:** No member of the College community, with intent to injure or defraud, shall falsely make, forge, manufacture, print, reproduce, copy, tamper with, or alter any writing, document, record, or identification used or maintained by the College or by members of the College community.

No member of the College community shall knowingly possess, display, or cause or permit to be displayed any writing, record, document, or identification form used or maintained by the College or by members of the College community, knowing the same to be fictitious, altered, forged, counterfeited, or made without authority.

**K. Confidentiality of College Records:** No person shall inspect, investigate, or use College files (i.e., counseling, financial aid, placement, records, registration) without proper College authorization.

**L. Firearms and other Dangerous Materials:** The possession or use of firearms, firecrackers, explosives, toxic or dangerous chemicals, or other lethal weapons, equipment, or material is not permitted on College property at any time except when specifically authorized by the College for educational purposes or when firearms used for recreational purposes and transported through the Campus meet the regulations of the Campus Police Department.

**M. Alcoholic Beverages:** No member of the College community shall possess or consume beer, wine, or other alcoholic beverages on College property, or any property which is under the direct control or responsibility of the College. This regulation shall not apply to the President's home. This rule may be suspended from time to time by authorization of the President.

**N. Drugs:** No member of the College community shall possess, distribute, or use any prohibited drug in either the refined or crude form, nor shall any member of the College Community possess property which is used, or intended for use, as a container for any controlled substance except controlled substances for personal usage, which must be under the current prescription of a licensed physician, those specifically authorized to Delta College by federal or State authorizing agencies for educational purposes.

**O. Smoking Policy:** In the interest of providing a safe and healthy environment, all Delta College buildings are smoke-free. This action is in accordance with the Michigan Clean Indoor Act, Pt. 126 of the Public Health Code P.A. 368 of 1978.

**P. Selling, Soliciting, and Distributing:** Any person who wishes to distribute, solicit, or sell information, materials, goods, or services not within the normal College activities and routine, must have the written permission of the Vice President of Student Services or the Vice President of Business and Finance or their designee.

**Q. Animals:** People may not bring animals on Campus or into College buildings. Leader dogs and animals used for educational purposes are exceptions; however, all animals must remain under the control of their owners and be properly licensed and medically treated as required by law.

**R. Federal, State, and Local Laws:** Violations of Federal, State, or local laws on-Campus, or off-Campus in connection with College-sponsored activities shall constitute violations of College rules.

**Questions regarding the rights and responsibilities of Delta College students and guests should be addressed to the Vice President of Student Services, 686-9339.**

## Plagiarism and Academic Honesty

The principles of truth and honesty are recognized as fundamental to a community of scholars. The College expects that both faculty and students will honor these principles and in so doing will protect the validity of College grades. This means that all academic work will be done by the student to whom it is assigned without unauthorized aid or falsification of any kind.

Faculty, for their part, will exercise care in the planning and supervision of academic work so that honest effort will be positively encouraged. Faculty will point out to students acceptable forms of incorporating the thoughts of others into their work.

- A. No student will knowingly, without proper authorization, procure, provide, or accept any materials which contain questions or answers to any examination to be given at a subsequent time. The unauthorized possession of such materials will be considered prima facie evidence of a violation of this provision.
- B. No student will, without proper authorization, complete, in part or in total, any examination or assignment for another person or allow such examination or assignment to be completed, in part or in total, by another person.
- C. No student will knowingly plagiarize\* or copy the work of another person and submit it as his or her own.
- D. No student will knowingly misrepresent performance or falsify documentation related to the performance of any activity required to complete course/curriculum objectives.

If a question of academic dishonesty should arise, the first efforts toward the solution of the problem will be the responsibility of the faculty involved. The student will be notified of the allegation as soon as it becomes known to the faculty member and given a reasonable opportunity to respond to the faculty member before judgment is reached. Any penalty assessed will be at the discretion of the faculty member, who will take care to match the severity of the penalty with the seriousness of the situation. In any instance in which a failing grade in a course is given based on a charge of academic dishonesty, the faculty will notify the division chair and the student in writing of the circumstances and the evidence on which the action was based.

The student may appeal, through the Disputed Final Grades policy (see Section IV), any grade affected by a charge of academic dishonesty.

\*Plagiarism is defined as, "the false assumption of authorship; the wrongful act of taking the product of another person's mind and presenting it as one's own." As developed by Alexander Lindey in "Plagiarism and Originality" (N.Y.: Harper, 1952)



## Disruptive Students

Disruptive conduct taints the educational atmosphere and may endanger the safety of students and staff. Accordingly, when student conduct on campus creates a serious enough disruption such that the only reasonable solution is removal of the student, a faculty/staff member may temporarily suspend or permanently expel that student from class/campus.

This policy and accompanying procedures assumes that the faculty/staff has made every attempt to resolve this issue with the student through such informal methods as individual conferences and/or written messages. If these informal methods have not met with success, the following formal procedures will be implemented.

1. The student will be verbally warned by the faculty or staff member the student's behavior is considered to be disruptive (describe the behavior to which the faculty/staff member is referring) and that if the student continues the behavior, s/he will be asked to leave the class/building.
2. If the student persists with the disruptive behavior, the faculty/staff member can then ask the student to leave the class or campus. At this time the faculty/staff must warn the student that failure to leave may result in police intervention. The faculty/staff must indicate whether the suspension is just for that day or if the student must appeal to the appropriate Division Chair to reenter the class. In other words, clarify for the student whether the suspension is temporary or permanent.
3. If after the previous verbal warnings the student continues to demonstrate disruptive behavior, the faculty/staff will summon the appropriate police agency who will have the option of arresting the student for criminal trespass, if necessary. The faculty/staff member's request for the student to leave provides the police agency with sufficient probable cause to effect an arrest.
4. If as a result of faculty/staff member's request for expulsion the student leaves the classroom/campus, the faculty/staff will notify their Division Chair or immediate supervisor in writing within 24 hours of the incident. The written report must include the student's identity and the behavior that was considered to be disruptive. Sufficient detail must be provided to allow the Chair/Supervisor to assess whether or not the policy was followed. Please note that the written report is only necessary when considering expulsion. Temporary suspension is handled informally by the faculty/staff member.
5. The Division Chair/Supervisor must immediately contact the student by phone, with a follow-up through registered mail, notifying them of the opportunity to explain the incident from the student's point of view. In addition, this notice will include the date by which the student must respond back to the Division Chair (or designee) or else forfeit their right to appeal the expulsion. Generally, the student will be given three class\* days to respond in person, by phone, or mail (post-marked). Within 24 hours of the conclusion of the meeting to review the suspension, the Chair/Supervisor will decide if the removal was justified or if the student should be reinstated. The Chair/Supervisor may find it necessary to consult with other College employees, students, or records for additional information upon which to base their decision. The Chair/Supervisor may support or deny the removal, or make other arrangements for the student.
6. The decision of the Chair/Supervisor will be conveyed to the student and the faculty/staff member who caused the removal as soon as possible, either in person or by phone. A written confirmation of the decision will be sent to both the staff member and the student within three class days. Within three class days of the receipt of the written decision, the student or the staff member may appeal in person, by phone, or in writing the decision to the appropriate Dean/Supervisor (identified in the written decision by the Chair); whose decision will be final.
7. It is important to emphasize that each step of the process should proceed as quickly as possible, while maintaining fairness and objectivity.

\*For the purpose of this policy, class days include only Monday-Friday when Delta College classes are in session.

## Student Complaint and Hearing Process

Every effort will be made to first resolve conflicts through informal discussions with the involved parties. If this fails, a written complaint may be filed as outlined below. In computing any time limit specified under this process, Saturdays, Sundays, official school closings, and holidays will be excluded. The Vice President of Student and Educational Services has the authority to adjust time lines as deemed necessary because of extra ordinary circumstances.

### A. Complaint

1. A complaint alleging violations of a College rule and/or regulation may be filed in writing against any student through the Campus Police Department on a State of Michigan Standard Incident Report Form, UD-107. Complaints must be filed within a reasonable length of time. This report shall then be forwarded to the Office of the Vice President of Student and Educational Services (or designee) for action.
2. After consultation with the student involved and after undertaking other investigations that may be appropriate under the circumstances, the Vice President of Student and Educational Services or designee shall take one of the following actions:
  - a. Dismiss the complaint.
  - b. Conduct an informal hearing and invoke a sanction if the alleged violation is admitted.
  - c. Refer to a Case Review Officer selected from a list prepared by September 1 each year by the Office of the President and named within three working days of the receipt of the complaint, barring unforeseen circumstances.
3. The action taken by the Office of the Vice President of Student and Educational Services (or designee) will be communicated to the student in writing.

### B. Case Review

Purpose: To consider complaints referred by the Office of the Vice President of Student and Educational Services (or designee) and to recommend appropriate action to be taken by the Office of the Vice President of Student and Educational Services.

1. The Case Review Officer will conduct a case review, normally including discussion with all parties involved, prepare a written report, and recommend that one of the following actions be taken by the Office of the Vice President of Student and Educational Services:
  - a. Dismiss the complaint.
  - b. Invoke a specific sanction.
  - c. Activate the Formal Hearing Panel.
2. The Case Review Officer will make a recommendation within five working days of receiving the complaint, barring extenuating circumstances.
3. Action by the Office of the Vice President of Student and Educational Services shall be communicated to students in writing.

### C. Formal Hearing Panel

1. Members of the Formal Hearing Panel shall serve for one year (September 1 through August 31 of the following year) and include:
  - a. A non-voting chair designated by the Office of the Vice President of Student and Educational Services who has not previously ruled on the case.
  - b. Three students selected by the Student Senate Committee.
  - c. One faculty selected by the Faculty Executive Committee.
  - d. One staff member selected by the Senate President.
  - e. A sufficient number of alternates shall be designated to assure full panel representation when a hearing is scheduled.
2. The Formal Hearing may be requested:
  - a. By the student filing a written request with the Office of the Vice President of Student and Educational Services within five working days following notification of the action taken or
  - b. By the Office of the Vice President of Student and Educational Services.
3. Within 10 working days of the receipt of a written request for a formal hearing, the Office of the Vice President of Student and Educational Services shall convene the Hearing Panel. The student will be advised of the date, time, and place of the scheduled hearing.

Continued



4. The Formal Hearing Panel will review all previous actions and conduct a formal hearing. Within 8 working days, barring extenuating circumstances, the Panel shall make a ruling specifying its findings. Such ruling may result in:
  - a. Confirmation of the action of the Office of the Vice President of Student and Educational Services.
  - b. Dismissal of all or a portion of the complaint.
  - c. Instructions to the Office of the Vice President of Student and Educational Services to invoke a specific sanction or initiate other disposition as the Hearing Panel deems appropriate under the circumstances.
5. The decision of the Formal Hearing panel will be communicated to the student in writing
6. The decision of the Formal Hearing Panel shall be final except that action involving suspension or dismissal from the College must be ratified by the Office of the President before implementation.

### Public Information Posting Guidelines

Students wishing to post information (i.e. ads for sale or rent of personal property, notices of Delta meetings and special events, announcements of Delta student activities, etc.) are requested to take the information to Instructional Support Services (J-102) for approval.

The complete guidelines including who may post, what may be posted and where to post, are available at Instructional support Services (J-102) or at 686-9515.

### Electronic Resources Access and Use Guidelines

1. By accessing College electronic information systems you assume personal responsibility for their appropriate use and agree to comply with all applicable College policies and procedures as well as external networks' policies and procedures, local, state and federal laws and regulations.
2. You are solely responsible for your access and use, and may not transfer or share your passwords or account except as expressly authorized in writing by the Executive Director of the Office of Information Technology (OIT).
3. Delta College electronic resources are provided to support the college mission. Uses such as private business use or use for personal gain, non-profit activities, advertising and fundraising not related to the college are prohibited. Excessive personal use for activities such as game playing, financial transactions or communicating with family and friends is also prohibited.
4. Uses that threaten the integrity of any system or its contents, the function of resources accessed through the system, the privacy or safety of anyone, or that are illegal are forbidden.
5. Misuse can lead to penalties up to and including loss of system access, employment termination or expulsion from classes or from the college. In addition, some activities may lead to risk of personal legal liability, both civil and criminal. Use common sense: the same rules of courtesy, ethics, morality and law apply here as elsewhere.
6. All persons accessing the College's electronic resources are covered by these guidelines, whether faculty, staff, students, trustees, volunteers, emeritus or retired persons, guests, or any other user.
7. All electronic resources of the College are covered by these guidelines, including without limitation all networks, supporting backbones and links, stand-alone computers, output devices, including printers, shared computers, and connecting resources of any kind, including any external networks.
8. You should not assume that anything received, sent or stored on any of these systems is private. The College generally, and system administrators specifically, will respect the privacy of users. However, these systems are not provided or intended for sending

or receiving private or confidential communications. If material is stored electronically rather than in paper files, it must be just as accessible to others who need access to those files as any paper file would be. In addition, system administrators have access to all mail and user access requests and will monitor them as necessary to assure efficient performance and appropriate use. If access discloses improper or illegal use, it may be reported and penalized. Legal process, including requests for information under the Freedom of Information Act, may also compel disclosure.

9. Each user must respect the privacy of every other user. You may not attempt to access, copy, modify or otherwise view or use the passwords, data, or electronic resources of any other user, except as expressly authorized in writing by the Executive Director of the Office of Information Technology (OIT).
10. You may not represent yourself as someone else, or send messages that appear to originate from someone else ("spoofing").
11. You have free speech and academic freedom rights in electronic forms of communication as you do in other forms of communication. However, your responsibilities may be somewhat different because of the nature of the medium. Electronic messages may be accessible to unintended audiences. The College will not impose restraints or monitor content of communications except as required by applicable law and system administration requirements. Your communications are subject to such laws, including those regarding others' rights to privacy, licensing or copyright, prohibition of defamation, or prohibition of harassment or stalking, and the consequences of violations can be severe.
12. Your access to resources of the College, including access to electronic resources, is a privilege and not a right.
13. You must observe classroom and computer lab policies and procedures, and comply with instructions of support staff in the computer labs and OIT staff. In particular, you will vacate workstations or the facility and will surrender other resources (such as printers and software) promptly when asked to do so both at closing times and when necessary to permit access by others.
14. You should assume that anything you access may be copyrighted. Absence of a © notice does **not** mean that the material is not copyrighted. That means that, for example, before you download a document, an image, or any other media to your web page, you should ask the author's permission.
15. You have full responsibility for statements made via the electronic resources of the College, including statements on any personal Web pages. Such statements do not represent the opinions of the College or any other member of the College community. Your personal Web page should include the following disclaimer at the bottom of the first page: "This space is provided as a service by Delta College. Views expressed do not necessarily reflect those of the College."
16. The following list is provided as an illustration, but not an exhaustive list, of the kinds of uses that could subject you to penalties by the College or by outside authority:
  - Harassment, such as repeated unwanted communication or communication that threatens
  - Violation of others' privacy
  - Destruction or damage to equipment, software or data of the College or others
  - Violation of computer system security
  - Use of computer accounts or access codes without permission, or permitting another unauthorized person to use accounts or access codes
  - Violation of copyright or software license agreements
  - Negligent or deliberate inappropriate use of the resource in ways that degrades service for other users, including viruses, Trojan Horses, worms and the like
  - Academic dishonesty
  - Violation of College policy or local, state or federal law
  - Using computer resources for any purpose which is criminal, unethical

Continued

cal, dishonest, damaging to the reputation of the College, or likely to subject the College to liability. "Spamming" or the non-commercial equivalent, defined as sending a large volume of unsolicited e-mail which is irrelevant to most if not all recipients.

17. Consequences and process will depend on the violation. When required to protect others or system integrity, immediate termination, removal of pages or other materials, or suspension of user privileges may occur. Otherwise, the user will normally be notified of the alleged infraction and will have an opportunity to respond to a person or body separate from system administration, and will have an opportunity to appeal. The process used will depend on the nature of the alleged infraction, and could be heard under the Judicial Process, Senate Policy 2.065; Student Violation of College Rules and Regulations, Senate Policy 8.045; Disciplinary Action, Support Staff Policies and Procedures 1.12; Affirmative Action or Sexual Harassment complaint procedures, or other appropriate college procedures, or could be referred to outside legal authorities where violations of local, state or federal law are involved. Penalties imposed may range from warnings to suspension of privileges for a temporary, definite, or indefinite period, to termination of employment or expulsion from classes or from the College, to civil suit or criminal prosecution and the penalties resulting from those actions.

18. Delta College reserves the right to monitor, manage, and control the usage of these resources and to make changes in these guidelines without prior notice.

## Student E-mail Accounts

Students admitted to Delta College are eligible to request a student e-mail account. Delta College student e-mail accounts will be terminated after a 12-month grace period during which the student has not been enrolled in a Delta College class.

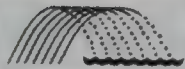
## Safety and Security Information

Information is also available on the Delta College Website on the following regulations and references.

- ◆ Crime Statistics  
[www.delta.edu/cops/stats.htm](http://www.delta.edu/cops/stats.htm)
- ◆ Parking and Traffic Regulations  
[www.delta.edu/cops/parking.htm](http://www.delta.edu/cops/parking.htm)
- ◆ Health Issues (Drug and Alcohol Guidelines)  
[www.delta.edu/healthissues.htm](http://www.delta.edu/healthissues.htm)







# Records Access and Confidentiality

## Access to and Confidentiality of Student Records

Each year the College informs students of the Family Educational Rights and Privacy Act of 1974 as amended. This Act is to protect the privacy of educational records, to establish the right of students to inspect and review their educational records, and to provide guidelines for the correction of inaccurate or misleading data through informal or formal hearings.

No one outside the institution shall have access to nor will the institution disclose any information, **other than Directory Information**, from students' educational records without the written consent of students except to qualified personnel within the institution, to officials of other institutions in which students seek to enroll, to persons or organizations providing student financial aid, to accrediting agencies carrying out their accreditation function, to persons in compliance with a judicial order, and to persons in an emergency in order to protect the health or safety of students or other persons. All these exceptions are permitted under the Act.

Within the Delta College community, only those members, individually or collectively, acting in the educational interests of students are allowed access to student educational records. These members include personnel in the Offices of Records and Registration, Admissions, Financial Aid, and Counseling, and academic personnel within the limitations of their need to know.

At its discretion the institution may provide **Directory Information** in accordance with the provisions of the Act to include: student name, verification of address, enrollment status, dates of attendance, degrees/certificates and awards, conferred including dates, curriculum, participation in officially recognized activities and sports, and weight and height of members of athletic teams. Upon the publication of this notice, you are advised of the information which the College may release. Students may withhold Directory Information by notifying the Director of Records and Registration in writing. Request for non-disclosure will be honored by Delta College for only one academic semester at a time; therefore, requests to withhold Directory Information must be filed with the Director of Records and Registration one week prior to each semester.

The law provides students with the right to inspect and review all information contained in their educational records, to challenge the contents of their educational records, to have a hearing if the outcome of the challenge is unsatisfactory, and to submit explanatory statements for inclusion in their files if they find the decisions of the hearing panels unacceptable.

Delta College will permit persons who are or have been in attendance at the College to inspect and review their educational records. Students wishing to review their educational records must make written requests to the appropriate department listing the item or items of interest. Only records covered by the Act will be made available within 15 working days of the receipt date of the request.

Students may not inspect and review the following as outlined by the Act: financial information submitted by their parents; confidential letters and recommendations associated with admissions, employment, job placement, or honors to which they have waived their rights of inspection and review; or educational records containing information about more than one student, in which case the institution will permit access only to the part of the record which pertains to the inquiring student. The institution is not required to permit students to inspect and review confidential letters and recommendations placed in their files prior to January 1, 1975, provided these letters were collected under established policies of confidentiality and were used only for the purpose for which they were collected.

Students who believe that their educational records contain information that is inaccurate or misleading or is otherwise in violation of their privacy or other rights, may discuss their problems informally with the persons in charge of the records involved. If these persons agree with the students, the appropriate records will be amended. If not, the students will be notified within a reasonable period of time that the records will not be amended and will also be informed of their right to a formal hearing by the Vice President of Student and Educational Services.



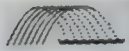




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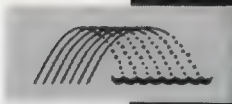
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M.A. New York University

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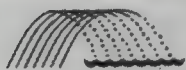
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M.S.A. Central Michigan University



## Definitions of College Terms

Don't get lost in College jargon. Understand these terms, which generally are common to all colleges, and your academic life will be easier.

**Academic Year:** September through the following August. Includes the Fall Semester, Winter Semester, Spring Semester, and Summer Session.

**Academic Credits:** See Credits.

**Accredited:** Certified by a specific state, regional, or national organization as meeting standards of quality in instruction, staffing, facilities, finances, and policies.

**Add:** Changing your schedule by adding a course after your initial registration.

**Admission:** Being accepted by Delta so you can register for courses.

**Assessment:** Basic skills tests in English, reading, and math to assist you in selecting courses at the appropriate level. Generally, assessment is required for new students.

**Associate Degree:** Degree (diploma) granted after successful completion of a program of study which has a minimum of 62 credits.

**Audit:** Registering for and attending a course, but receiving no grade or credits. Regular tuition and fees must be paid. Audits do not count toward completion of a program or graduation.

**Centers:** See Off-Campus Centers.

**Certificate:** Document granted upon successful completion of a program of study which has less than 62 credits.

**Concurrent Course:** Often referred to as Corequisite. A course that must be taken during the same semester as another course is taken. Concurrent courses are listed at the beginning of the course description. See Section VI for Academic Course Descriptions.

**Contact Hours:** The total hours of lecture and laboratory instruction required for each course.

**Corequisite:** See Concurrent Course.

**Course:** A single subject, such as ENG 111, taken for one semester.

**Credits:** Also referred to as Academic Credits, Credit Hours, and Semester Hours. Each course is assigned a number of credits which generally indicates the number of hours per week the class meets; i.e., a three credit course generally meets three hours each week. Courses with labs and occupational courses, however, generally meet more hours than the number of credits they carry. Tuition and fees are ordinarily charged by credit.

**Curriculum:** See Program of Study.

**Drop:** Changing your schedule by dropping a course after your initial registration.

**Dual Degree:** An Associate degree that is earned by completing two specified curricula concurrently. Approved curricula combinations are listed in Section III, Dual Degrees.

**Elective:** A course you may elect (choose) to take as opposed to a course you are required to take.

**Fees:** Special charges for courses or services other than tuition.

**Financial Aid:** Money received from various sources (grants, loans, scholarships, jobs) to help students with college costs. Most, but not all, forms of aid are based on financial need.

**Financial Aid Transcript:** A document you are required by federal regulations to have every other college you attended send to the Delta College Financial Aid Office, which lists any federal aid you may have received or states that you received no aid. Required of financial aid recipients before aid can be awarded.

**Full-Time Student:** Enrolled in 12 or more credits in a semester.

**G.E.D. (General Educational Development):** A high school equivalency certificate for adults who did not receive the traditional high school diploma. It is earned by passing the national G.E.D. exam, which may be taken through Delta Assessment/Testing Services Office.

**General Education:** A group of courses in the areas of social science, natural/physical science, communication, and humanities which provide a common and broadly-based body of knowledge.

**GPA (Grade Point Average):** The GPA is determined by dividing the honor points earned (see definition of honor points) by the number of credits attempted, excluding courses in which you received final grades of "P," "I," "X," "WP," "WE," "WI," "W," or "NC." The semester GPA includes grades in each semester; the cumulative GPA includes grades from all semesters at Delta.

**Grade Dispute:** The process available to you if you do not agree with the grade you received in a course. See Section IV, Academic Policies and Information, Disputed Final Grade Policy.

**Grade Ombudsman:** The staff member who will provide you with information and assistance in understanding and following the Grade Dispute process. For name of person, contact Senate Office.

**Graduation Requirements:** Specific steps you must successfully complete to qualify for a degree or certificate. See Section IV, Academic Policies & Information, Graduation Requirements for details.

**Grants:** Money provided for educational expenses which does not have to be repaid; also called "gift aid."

**Honor Points:** Numerical values assigned to a letter grade for a course ("A" = 4 pts., "B" = 3 pts., "C" = 2 pts., "D" = 1 pt., "E" = 0 pts.), which are then multiplied by the number of credits assigned to the course; i.e., a "B" grade for a three credit course would have three honor points x three credits = 9 honor points.

**In-District Student:** A legal resident of Bay, Midland, or Saginaw county as defined by the Delta College residency policy.

**Instructor-Initiated Drop:** Being dropped from your course by your instructor for either lack of attendance or lack of the required prerequisites.

**Loans:** Money you borrow from your bank or credit union for educational expenses which must be repaid after you leave school.

**MACRAO:** A transfer agreement between many Michigan two- and four-year colleges, which standardizes the basic general education requirements. See Section III, Programs of Study for details.

**Ombudsman:** See Grade Ombudsman.

**Orientation:** A program you will participate in as a new Delta student, which will acquaint you with the College facilities, programs, services, and procedures and during which a counselor will assist you in reviewing your program and selecting your courses.



## Students that Experience



"The Delta Difference is opportunity for you to achieve goals. Going to Delta gives me confidence in myself in that I will be able to succeed at a larger university when I transfer."

*Danette Sanak, Pinconning*

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**Out-of-District Student:** A legal resident of Michigan, residing in a county other than Bay, Midland, or Saginaw.

**Out-of-State Student:** A legal resident of a state other than Michigan or of a foreign country.

**Part-Time Student:** Enrolled in less than 12 credits in a semester.

**Prerequisite:** Courses which must be successfully completed or requirements which must be met before enrolling in a specific course. Prerequisites are listed at the beginning of the course description. See Section VI for Academic Course Descriptions.

**Probation:** A warning status due to low grades or improper conduct.

**Program of Study:** A group of specific courses which you are required to complete successfully in order to qualify for a degree or certificate.

**Registration:** The time when you enroll in your courses and pay your tuition and fees. See Section II, The Enrollment Process, Registration for details.

**Required Course:** A course in your program that you must take as opposed to one that you elect (choose) to take.

**Schedule of Academic Classes Booklet:** A Delta publication which lists all the courses being offered that semester, the days and times when they will be offered, the location (on or off-Campus) where they will be held, the course fees, the instructors, and the registration schedule. These schedules are published for each semester.

**Semester:** Generally 15 weeks in length. The three semesters in an academic year at Delta are Fall (late August through December), Winter (January through April), and Spring/Summer (May through August).

**Semester Hours:** See Credits.

**Session:** Generally, 7-1/2 weeks in length, which is half the length of a semester. The two primary sessions in an academic year at Delta are Spring (May through June) and Summer (July through August).

**Service Credits:** Credits assigned to non-credit courses. These credits are not applicable to a Delta Associate degree or Certificate and are not transferable to other colleges.

**Suspension:** Being required to leave Delta College due to a very low grade point average or unacceptable conduct.

**Transcript:** Your official Delta College record listing all academic courses attempted with grades, credits, and honor points; all transfer credits accepted; any credit awarded by examination or advanced placement; and your cumulative GPA.

**Transfer:** The official process of moving from attendance at one college or university to attendance at another college or university.

**Tuition:** The money you pay the College for instruction and services. A dollar amount is assigned to each credit. Tuition is determined by multiplying the dollar amount by the number of credits for which you are registering. In-District, Out-of-District, and Out-of-State tuition rates are different. See the Academic Class Schedule booklet for current tuition rates.

**Withdrawal:** Dropping all of your courses and leaving Delta College. Official withdrawal must be done through Records & Registration.

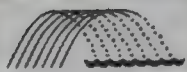


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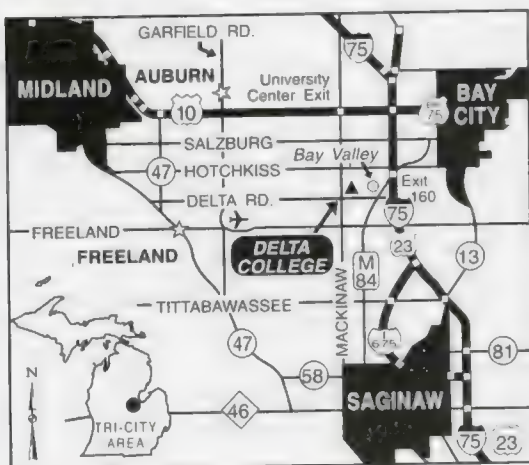
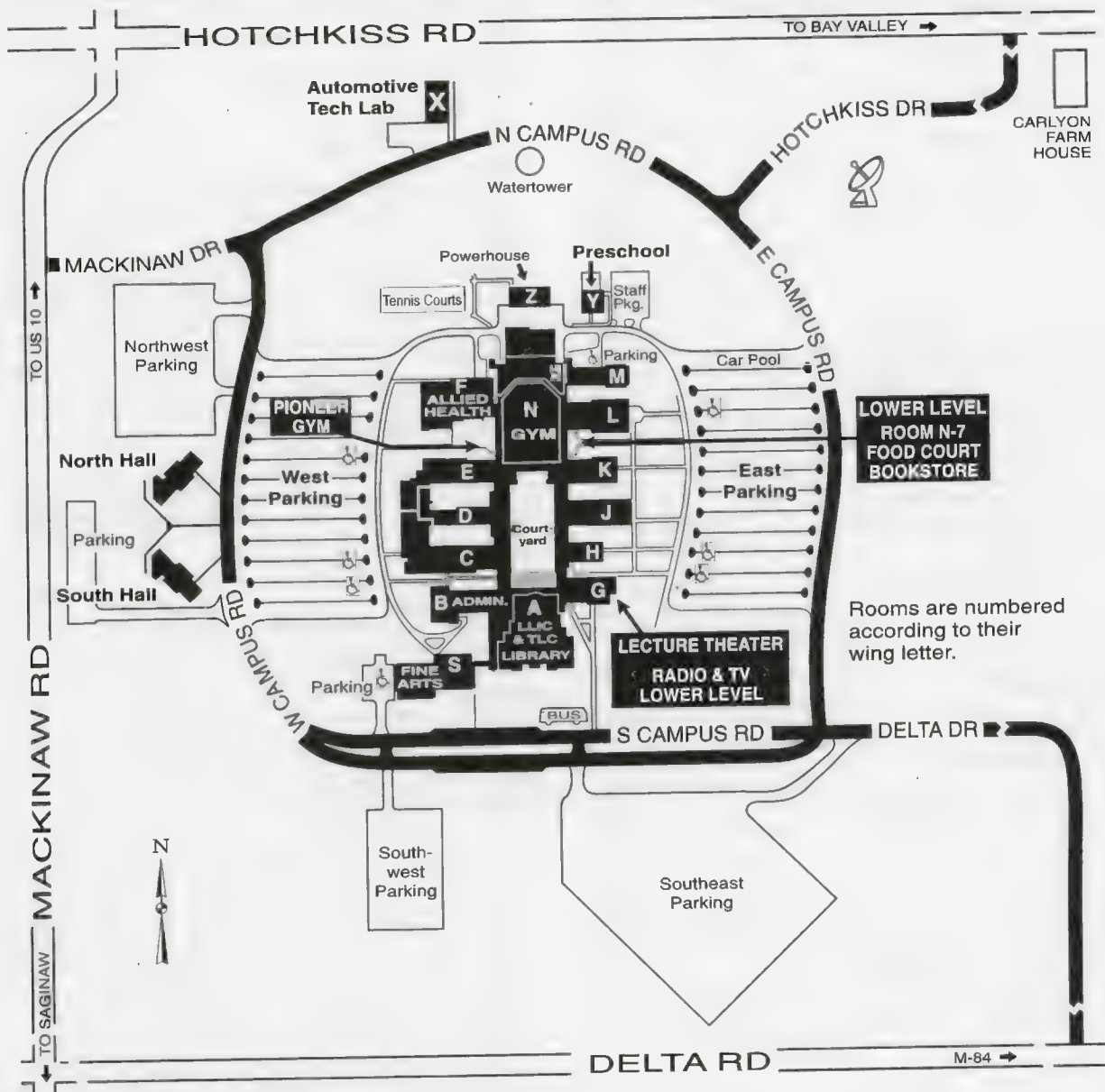


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# DELTA COLLEGE

## MAIN CAMPUS · UNIVERSITY CENTER, MI



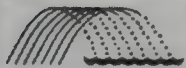
### From I-75

Take exit 160 Turn south onto M-84. Go approximately ¼ mile to the second traffic light and turn west onto Delta Road. Travel 1¼ miles and the College is on the right.

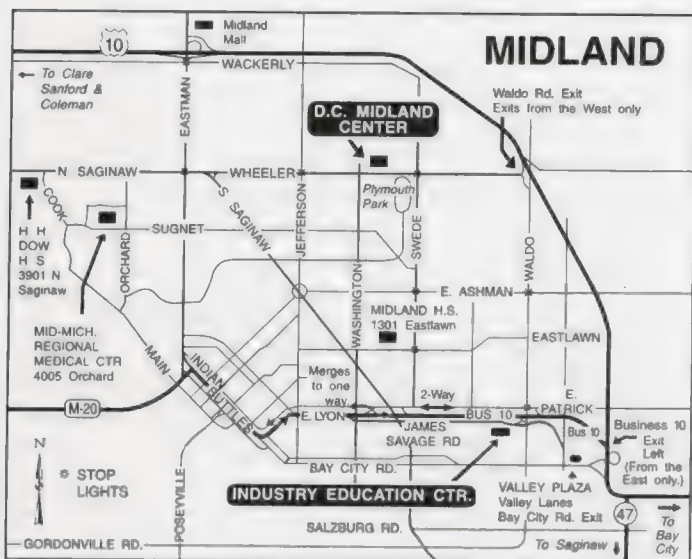
### From US-10

Exit south at the Mackinaw Road exit onto Mackinaw Road. Travel about 2¼ miles, past the blinker light at the Hotchkiss Road intersection. College entrance is on the left.





## DELTA COLLEGE OFF-CAMPUS CENTERS



### Industry Education Center

3024 James Savage Road

Phone: (989) 496-3368

Fax: (989) 496-0038

### Midland Center

1025 East Wheeler

Phone: (989) 495-4010

Fax: (989) 835-8422

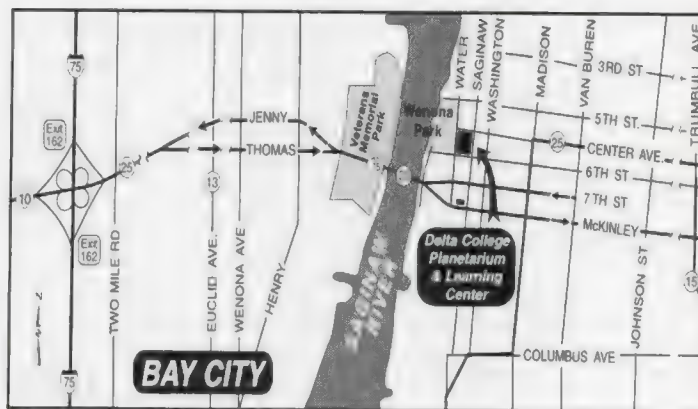
### Planetarium & Learning Center

100 Center Avenue

Bay City, MI 48708

Phone: (989) 667-2260

Fax: (989) 667-2266



### Ricker Center

1925 S. Outer Drive

Phone: (989) 752-7500

Fax: (989) 752-9762

### Ruben Daniel Lifelong Learning Center (LLLC)

1903 N. Niagara

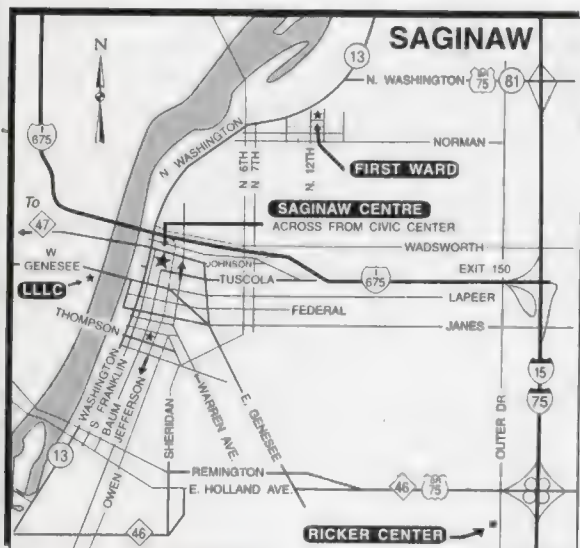
Phone: (989) 776-0600

### Saginaw Centre

310 Johnson

Phone: (989) 758-3600

Fax: (989) 758-3434



# Notes



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# Notes



# Notes





# Services, Opportunities, and Contacts

To Ask Questions About:	Contact: (e-mail)	Location:	Phone
Academic Advising	Counseling (counsel@alpha.delta.edu)	D-102	989-686-9330
Academic Standards	Records & Registration (regis@alpha.delta.edu)	B-101	989-686-9303
Academic Testing Center	LLIC (acadtest@alpha.delta.edu)	A-110	989-686-9182
Adding Courses	Records & Registration (regis@alpha.delta.edu)	B-101	989-686-9305
Admissions	Admissions (admit@alpha.delta.edu)	D-101	989-686-9093
Affirmative Action	Affirmation Action Officer (momosque@alpha.delta.edu)	J-101	989-686-9547
African-American Services	Diane Short, Multi-Cultural Services (dshort@alpha.delta.edu)	D-102	989-686-9121
Alpha Mu Gamma	Pam Renna (psrenna@alpha.delta.edu)	S-50	989-686-9447
Apprenticeship/Skilled Trades	Skilled Trades	A-54	988-686-9437
Asian Services	Multi-Cultural Services (multicultural@alpha.delta.edu)	D-102	989-686-9125
Assessment/Testing Services	Assessment/Testing (assess@alpha.delta.edu)	D-101	989-686-9338
Black Student Union Organization	Diane Short, Multi-Cultural Services (dshort@alpha.delta.edu)	D-102	989-686-9121
Bookstore	Bookstore (bookstor@alpha.delta.edu)	Main Campus	989-686-9030
		Lower Level Food Court	
Bridge Program for Underprepared Students	Director (tallen@alpha.delta.edu)	J-114	989-686-9163
Broadcasting	Broadcasting-television (wdcq@alpha.delta.edu)	A-90	989-686-9350
	Broadcasting-radio (wdcx@alpha.delta.edu)	A-90	989-686-9350
Bus Schedule	Bay Metro		989-894-2999
	Saginaw Transit		989-753-9531
Campus Police	Campus Police (cops@alpha.delta.edu)	N-102	989-686-9112
Career Counseling	Counseling (counsel@alpha.delta.edu)	D-102	989-686-9330
Career Information	Career Services (jobplace@alpha.delta.edu)	Main Campus	989-686-9072
		East Lower Level	
Caution Status	Records & Registration (regis@alpha.delta.edu)	B-101	989-686-9303
Centers, Off-Campus	Instructional Support Services (iss@alpha.delta.edu)	J-102	989-686-9515
Cheerleading	Peggy Crawford (pscrawfo@alpha.delta.edu)	N-163	989-686-9183
Chi Alpha	Cathy Infante (cjinfante@alpha.delta.edu)	C-118	989-686-9628
Clubs & Organizations	Student Activities (stuact@alpha.delta.edu)	D-102	989-686-9336
Collegiate (Student Newspaper)	Karen Randolph (colpaper@alpha.delta.edu)	N-101	989-686-9337
Computer Lab (Open)	LLIC	A-110	989-686-9513
Conduct, Rules & Regulations	Vice President of Student Services	B-131	989-686-9340
Conferences	Conference Services (fehoffma@alpha.delta.edu)	B-116	989-686-9208
Co-Op Education	Co-Op Office (coop@alpha.delta.edu)	F-40	989-686-9474
Corporate Services	Corporate Services (info@corpserv.delta.edu)	Saginaw Centre	989-758-3600
Criminal Justice Training	Criminal Justice (crimjust@alpha.delta.edu)	G-117	989-686-9176
Delta Epsilon Chi (DECA)	Shawna Mahaffey (profsir@aol.com)	S-238	989-686-9371
Dental Hygiene Clinic	Dental Clinic	F-140	989-686-9469
Dropping Courses	Records & Registration (regis@alpha.delta.edu)	B-101	989-686-9305
Disability Concerns	Director (multicultural@alpha.delta.edu)	D-102	989-686-9125
Dismissal Status	Records & Registration (regis@alpha.delta.edu)	B-101	989-686-9303
Distance Learning	Distance Learning (distancelearning@alpha.delta.edu)	Main Campus	989-686-9088
		West Lower Level A-61	
Employment Services (Student)	Employment Services (jobplace@alpha.delta.edu)	Main Campus	989-686-9074
		East Lower Level	
Financial Aid	Financial Aid (finaid@alpha.delta.edu)	D-101	989-686-9080
Fire Science Academy	Coordinator (dpcoutur@alpha.delta.edu)	F-39	989-686-9020
Food Services	Food Services (cmgrethe@alpha.delta.edu)	N-25	989-686-9037
Foundation Office	Foundation Office (foundation@alpha.delta.edu)	A-43	989-686-9224
Golf Club (Student)	Chuck Lord (ctlord@alpha.delta.edu)	N-155	989-686-9477
Grade Ombudsman	Senate Office (senate@alpha.delta.edu)	B-156	989-686-9297
Grades	Records & Registration (regis@alpha.delta.edu)	B-101	989-686-9303
Graduation, Requirements & Applications	Records & Registration (regis@alpha.delta.edu)	B-101	989-686-9305
Health Care Student Organizations	Radiography, Dental Hygiene, Physical Therapist Assistant	N-160	989-686-9025
	Nursing	F-226	989-686-9500
Hispanic Services	Multi-Cultural Services (multicultural@alpha.delta.edu)	D-102	989-686-9125
Home Builders Organization (Student)	Mike Finelli (mjfinelli@alpha.delta.edu)	N-150	989-686-9021
Honors Program	Honors Office (honors@alpha.delta.edu)	J-110	989-686-9617
Illness, Injury, Health Concerns & Insurance	Health Services (slinzy@alpha.delta.edu)	N-102	989-686-9333
Incomplete Grades	Course Instructor		—
Industry Education Center	Industry Education Center	Midland	989-496-3368
Institutional Advancement	Executive Director (kmmacart@alpha.delta.edu)	B-156	989-686-9225





# Services, Opportunities, and Contacts

**To Ask Questions About:** ..... **Contact: (e-mail)** ..... **Location:** ..... **Phone**

International/Intercultural Programs .....	International/Intercultural (bjtedrow@alpha.delta.edu) .....	B-130 .....	989-686-9485
International Students .....	Admissions (admit@alpha.delta.edu) .....	D-101 .....	989-686-9093
Internet Courses .....	Distance Learning (distancelearning@alpha.delta.edu) .....	A-62 .....	988-686-9088
Inter-Varsity Christian Fellowship .....	Jerry Schuitman (jaschuit@alpha.delta.edu) .....	G-207 .....	989-686-9195
Jobs, Part/Full-Time, On/Off-Campus .....	Employment Services (jobplace@alpha.delta.edu) .....	Main Campus .....	989-686-9074
		East Lower Level	
Judicial/Due Process .....	Vice President Student Services .....	B-131 .....	989-686-9340
Library .....	LLIC (library@alpha.delta.edu) .....	A-110 .....	989-686-9014
	Audio Visual .....	A-110 .....	989-686-9307
	Reference .....	A-110 .....	989-686-9560
	Circulation .....	A-110 .....	989-686-9310
Lifelong Wellness Facilities .....	Health & Wellness (health@alpha.delta.edu) .....	N-160 .....	989-686-9025
Lost and Found .....	Campus Police (cops@alpha.delta.edu) .....	N-102 .....	989-686-9112
Learning Disabilities .....	Coordinator (pcoonan@alpha.delta.edu) .....	A-118 TLC .....	989-686-9562
Midland Center .....	Midland Center .....	Midland .....	989-495-4010
Minds Eye Theatre Group .....	Dr. Stanley Kuzdzal (sjkuzdza@alpha.delta.edu) .....	J-122 .....	989-686-9045
Multi-Cultural Services .....	Multi-Cultural Services (multicultural@alpha.delta.edu) .....	D-102 .....	989-686-9125
Native American Services .....	Multi-Cultural Services (multicultural@alpha.delta.edu) .....	D-102 .....	989-686-9125
Non-Credit Courses .....	Instructional Services (iss@alpha.delta.edu) .....	J-102 .....	989-686-9515
Off Campus Centers .....	Instructional Services (iss@alpha.delta.edu) .....	J-102 .....	989-686-9515
Orientation for New Students .....	Admissions (admit@alpha.delta.edu) .....	D-101 .....	989-686-9093
Parking .....	Campus Police (cops@alpha.delta.edu) .....	N-102 .....	989-686-9112
Personal Problems .....	Counseling (counsel@alpha.delta.edu) .....	D-102 .....	989-686-9330
Phi Theta Kappa International .....	David Baskind (debaskin@alpha.delta.edu) .....	S-217 .....	989-686-9374
Planetarium & Learning Center .....	Planetarium (planet@alpha.delta.edu) .....	Bay City .....	989-667-2260
Police (see Campus Police)			
Probation Status .....	Records & Registration (regis@alpha.delta.edu) .....	B-101 .....	989-686-9303
Public Information .....	Marketing & Public Information (tlock@alpha.delta.edu) .....	B-155 .....	989-686-9490
Records (Student) .....	Records & Registration (regis@alpha.delta.edu) .....	B-101 .....	989-686-9305
Recycling .....	Facilities Management (lapetee@alpha.delta.edu) .....	B-163 .....	989-686-9209
Registration .....	Records & Registration (regis@alpha.delta.edu) .....	B-101 .....	989-686-9305
Residency Qualifications .....	Admissions (admit@alpha.delta.edu) .....	D-101 .....	989-686-9093
Ricker Annex Center .....	Ricker Annex Center .....	Saginaw .....	989-752-7500
Rights, Student .....	Vice President of Student Services .....	B-131 .....	989-686-9340
Room Scheduling .....	Instructional Services (iss@alpha.delta.edu) .....	J-102 .....	989-686-9494
Security, Campus .....	Campus Police (cops@alpha.delta.edu) .....	N-102 .....	989-686-9112
Sexual Harassment .....	Affirmative Action Officer .....	J-101 .....	989-686-9547
Society of Hispanic Leaders (S.O.H.L.) .....	Monica Hernandez-Campbell, Multi-Cultural Services .....	D-102 .....	989-686-9197
Speaker's Bureau .....	Marketing & Public Info (tlock@alpha.delta.edu) .....	B-155 .....	989-686-9490
Sports, Intercollegiate & Intramural .....	Student Athletics (stuact@alpha.delta.edu) .....	D-102 .....	989-686-9543
Student Activities .....	Multi-Cultural Services (stuact@alpha.delta.edu) .....	D-102 .....	989-686-9336
Student Programming Board .....	Student Activities (stuact@alpha.delta.edu) .....	D-102 .....	989-686-9336
Student Senate .....	Senate Office (senate@alpha.delta.edu) .....	A-69 .....	989-686-9488
Students That Are Challenged .....	Kathleen Navarre (kanavarr@alpha.delta.edu) .....	N-159 .....	989-686-9481
Teaching/Learning Center Services .....	Teaching/Learning Center (tlc@alpha.delta.edu) .....	A-110 .....	989-686-9314
Tech Prep .....	Tech Prep (pagraves@alpha.delta.edu) .....	B-144 .....	989-686-9218
Telecourses, Internet .....	Distance Learning (distancelearning@alpha.delta.edu) .....	Main Campus .....	989-686-9088
		West Lower Level A-61	
Textbooks & Class Supplies .....	Bookstore (bookstor@alpha.delta.edu) .....	Main Campus .....	989-686-9030
		Lower Level Food Court	
Traffic Regulations & Violations .....	Campus Police (cops@alpha.delta.edu) .....	N-102 .....	989-686-9112
Transcript Requests .....	Records & Registration (regis@alpha.delta.edu) .....	B-101 .....	989-686-9305
Transfer Credit Acceptance .....	Records & Registration (regis@alpha.delta.edu) .....	B-101 .....	989-686-9554
Transfer to Another College .....	Counseling (counsel@alpha.delta.edu) .....	D-102 .....	989-686-9330
Transferability of Delta Courses .....	Counseling (counsel@alpha.delta.edu) .....	D-102 .....	989-686-9330
Trilogy Club (Student) .....	Dave Bailey (dbbailey@alpha.delta.edu) .....	F-202 .....	989-686-9262
Tutorial Association (Student) .....	Jim Valkenburg (jcvalken@alpha.delta.edu) .....	A-110 .....	989-686-9034
Tutoring .....	Teaching/Learning Center (tlc@alpha.delta.edu) .....	A-110 .....	989-686-9314
USS Solar Wind (Student) .....	Mark Robertson (mgrobert@alpha.delta.edu) .....	D-168 .....	989-686-9250
V.A. Benefits, Certification & Information .....	Veterans (vets@alpha.delta.edu) .....	B-101 .....	989-686-9465
Volunteer Program .....	Career & Employment Services (jobplace@alpha.delta.edu) .....	Main Campus .....	989-686-9434
		East Lower Level	
Withdrawal from College .....	Records & Registration (regis@alpha.delta.edu) .....	B-101 .....	989-686-9305



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